Wheat OS

SOCIAL AND ECONOMIC IMPLICATIONS OF LARGE SCALE INTRODUCTION OF HIGH-YIELDING VARIETIES OF WHEAT IN THE PUNJAB WITH SPECIAL REFERENCE TO THE FEROZEPUR DISTRICT

(U.N.D.P. GLOBAL PROJECT)

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DEPARTMENT OF ECONOMICS AND SOCIOLOGY
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P R E F A C E

This research project entitled "Socio-Economic Implications of Large-Scale Introduction of High-Yielding Varieties of Wheat" was activated on 13.6.1972 with 100 per cent financial support from the U.N.D.P.

The major focus of this study was i) to identify the factors that promoted/hindered the adoption of HYVP; ii) to examine institutional changes in land ownership, tenurial relationships, land holdings (size of holding) and the agencies engaged in the supply of modern technological inputs, including credit; iii) to examine the pattern of income distribution among the rural classes and to describe the farm family investment patterns resulting from the adoption of new technology. The present volume presents the findings of the study.

The objectives and the design of the study are discussed in Chapter I. The economy of the selected villages is highlighted in Chapter II. Chapter III brings out the socio-economic characteristics of the sample households. Farm family assets are described in Chapter IV. Chapter V deals with the shifts in the use of inputs and Chapter VI in employment & wage rates, whereas Chapter VII is devoted to the location of shifts in income and income distribution. Chapter VIII deals with the marketed surplus and Chapter IX denotes changes in investment behaviour of the sample households. The household expenditure is described in Chapter X and the social implications of H.Y.V.P. in Chapter XI, followed by summary of the results of the study.

The study owes its success to several persons, who directly participated in it or otherwise gave their full co-operation. We express our sincere thanks to them all.

We would particularly like to express our sincere thanks to Dr. M. S. Randhawa, Vice-Chancellor of the Punjab Agricultural University, for providing facilities for the successful execution of the project. We are also thankful to the U.N.D.P. and Prof. V. M. Dandekar for providing financial support for this study.

Thanks are also due to my P.A., Mr. Midha, and other staff members who provided secretarial help in completing this report on time.

It is our earnest hope that the results of the study will prove useful in underlining the socio-economic implications, associated with the adoption of high-yielding varieties programme.

(A. S. Kahlon)
Project Director

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CHAPTER I

INTRODUCTION

With the introduction of high-yielding varieties and hybrids of foodgrains, a significant increase in the incomes of farmers is witnessed in the area of adoption. Finding the high-yielding varieties of wheat more profitable than the local ones, the farmers adopted the former much more readily. As a result, the area under high-yielding wheat varieties increased from 621 thousand hectares in 1967-68 to 1589 thousand hectares in 1970-71 in the Punjab. The percentage area under these semi-dwarf varieties to total area under wheat increased from 34.69 to 69.12 during the corresponding period. As a result, the production of wheat increased from 3335 thousand metric tons in 1967-68 to 5145 thousand metric tons in 1970-71 and 5598 thousand metric tons in 1971-72.

A comparison of the production figures of 1965-66, when high-yielding varieties were first introduced, with that of 1970-71 would show that production of wheat experienced an increase of 168.53 per cent. The annual exponential growth rate of the area and the yield of wheat worked out to be 9.8 and 16.9 per cent respectively from 1965-66 through 1970-71. Thus productivity accounted for a higher increase in production than the expansion of area under wheat.

In the Ferozepur District (the operational area of the study), the area under high-yielding varieties of wheat increased from 125 thousand hectares in 1967-68 to 253 thousand hectares in 1970-71, which accounted for 59.25 per cent of the total area under wheat in 1970-71.

The question is often raised that the benefits of new technology may not be equally shared by different categories of rural households, not even in the homogeneous areas. Various research studies

conducted in the recent years have pointed to the unequal distribution of gains among the rural population. Freebairn[1] reported Mexico as a classic case of agriculture breakthrough, which added much to rural income disparities. Ledejinsky[2] pointed out that in the places, where the new technology succeeded, it gave rise to a host of political and social problems. Frankel[3] brought out that the tendencies toward social polarisation and class conflict emerged much more quickly than originally anticipated. The report of the Ministry of Home Affairs, Government of India, 1970 also expressed the apprehensions that the new agricultural technology might accentuate economic disparities and tensions between the privileged and the unprivileged groups.[4] "The new technology and strategy, having been geared to goals of production, with secondary regard to social implications, have brought a situation in which elements of disparity, instability and unrest are becoming conspicuous with the possibility of increase in tensions". Prof. Blanckenburg,[5] who recently made a study of some progressive farmers in Mysore and Punjab, however, observed that no symptoms were visible of the rise of a dual economy in the study areas. He observed "Without denying the possibility of future rise of agricultural unrest we feel, however, that two points in the above argumentation are weak. The empirical evidence for generally growing rural tensions is insufficient so far, and the causal relation, i.e., the question whether the unrest is really an outcome of the new agricultural development, has not been clarified". It is, therefore, important to

1. Freebairn, D.K., 'The Dichotomy of Prosperity and Poverty in Mexican Agriculture', Land Economics, February, 1969.
2. Ledejinsky, W., 'The Green Revolution', The Statesman, Sept.12, 1970.
3. Frankel, F.R., India's Green Revolution - Economic Gains and Political Costs, Princeton(1971).
4. Government of India, Ministry of Home Affairs, Research and Policy Division: "The Causes and Nature of current Agrarian Tensions", A Summary(mimeo).
5. Blanckenburg, Peter von., 'A study of some progressive farmers in Mysore and Punjab' Economic and Political Weekly, Vol. VIII, No.4, Sept. 30, 1973.

do some depth analysis of the situation.

Again, some social changes are occurring in the countryside and new functional leadership is emerging in the rural areas. A study of all these forces is essential to underline the socio-economic implications associated with the high-yielding varieties programme.

Objectives

This project is directed to identify and describe the way in which the introduction of HYVP, aimed at the transformation of agriculture, has affected the lives and livelihood of the different classes of persons engaged in agricultural production and other occupations. More specifically, the objectives of the study are :

1. To identify the factors that promoted/hindered the adoption of HYVP.
2. To examine institutional changes in land ownership, tenurial relationships, land holdings(size of holding) and the agencies engaged in the supply of modern technological inputs including credit.
3. To examine the pattern of income distribution among the rural classes, and
4. To describe the farm family investment patterns resulting from the adoption of new technology.

Material and Methods

The Ferozepur District was purposively selected for the execution of the study, because of the availability of bench-mark data there. Our Farm Management study(1967-68 to 1969-70) in this district was conducted in 15 villages selected by adopting multistage stratified random sampling technique, with village as the primary unit of sampling and operational holding as the ultimate unit. Of

these 15 villages, three villages(one from each zone) were selected on the basis of the concentration of area under high-yielding varieties of wheat. In addition to the 10 cultivating households, already selected in 'Farm Management' scheme from every village, 15 agricultural labour households were randomly selected from each village for the detailed study. Thus the total sample constituted 30 cultivating households and 45 labour households. The cultivating households were further categorized into small, medium and large, on the basis of their operational holding size.

In addition to these three villages, village Ratta Khera was purposively selected to review socio-economic changes at different points of time, as this village was earlier surveyed in 1956 and 1961 by the Agro-Economic Research Centre, Delhi. The analysis of this village is separately presented as a case study.

The analysis presented in this report makes use of the 'Farm Management' study data available for these villages for 1967-68 to 1969-70 and extends it to 1971-72. Since it was difficult to obtain unbiased income data for 1970-71 through the recall method used by the farmers, it was considered appropriate to assemble such data for the latest year and confine the analysis to 1971-72 data only.

Collection of data : The field staff was posted in the villages to assemble field data through a judicious combination of the cost accounting and the survey method. Information sought in the village schedule related to such aspects as land utilization and cropping pattern and the infrastructure built in/around the villages. The institutions, which supplied modern technological inputs, including credit, irrigational facilities, marketing and storage facilities, were also interviewed. The relationships with neighbouring villages in

terms of spread in communications and technical know-how related to HYVP and the activities of the village Panchayat for the development of agriculture and other welfare activities, provided the background information for the villages.

The census schedule developed for the purpose of collecting information on certain investment items from all households in the village furnished data on population, occupational structure, composition of family livelihood, distribution of access to land and other means of production, changing patterns of caste structure and functional leadership. In addition, cultivator and labour schedules were designed to collect the detailed information from the selected households.

CHAPTER II

ECONOMY OF THE SELECTED VILLAGES

As indicated in the chapter on methods and materials, the three villages, namely, Bhinder Kalan, Gill and Faqarsar under study represented the three zones of Ferozepur District, demarcated on the basis of soil type, cropping pattern and irrigation facilities. These villages were selected to study socio-economic changes in a continuum because they were earlier surveyed in the Farm Management Scheme "Studies in Economics of Farm Management, Ferozepur District(Punjab)" from 1967-68 through 1969-70.

Salient features of the selected villages

Because of the 'Build link road' policy of the State Government, all the three villages were well connected. Gill is located on Moga-Kotkapura road, whereas Bhinder Kalan and Faqarsar are connected with the approach roads constructed during 1967-68 and 1969-70 respectively. The construction of this approach road in Bhinder Kalan has led to the provision of a bus stop, which has increased mobility in the area. In Faqarsar, it facilitated the plying of trucks and tractors for transporting fertilizers from the marketing society Gidderbaha to the village co-op. society and for carrying the produce from the village to the markets at Malout and Gidderbaha. The increased production of wheat, following the introduction of high-yielding varieties, necessitated the expansion of marketing facilities in Bhinder Kalan.

The factor market has also shown some improvement. For the timely supply of fertilizers to the cultivators, a godown of 1000 qtls capacity was built by the village co-op. society, Faqarsar in 1968-69. The increased number of tractors and oil engines led to the opening of a petrol pump in Bhinder Kalah in 1969-70.

No fertilizer agency other than co-operatives existed in these villages for the supply of seeds, insecticides and pesticides, agricultural implements and their repairing and servicing facilities. But these agencies were developing in the nearby towns/markets and the farmers of the selected villages were making use of their services.

Again, social institutions have also expanded in the wake of green revolution. A girls high school was established, in addition to the high school for boys, in Bhinder Kalan in 1968-69 and the middle school was upgraded to a high school in Faqarsar in 1970-71. The branches of the commercial banks were located at a distance of 3, 10 and 6 kilometers from Gill, Bhinder Kalan and Faqarsar respectively. All the selected villages had the benefit of a co-operative credit/ service society.

Land utilization : Table 2.1 shows the various aspects of land utilization from 1966-67 through 1971-72 in the selected villages. The area under fallow land declined from 70 hectares in 1966-67 to 48 hectares in 1971-72, thereby increasing the net area sown from 3272 hectares to 3302 hectares during the corresponding period. The decline in fallow land was quite marked in Faqarsar as compared to the other two villages(Appendix 2.1). The nearness of the village from the distributory provided abundant canal water, thereby facilitating the sowing of wheat after harvesting the cotton crop. For this reason, the area under fallow land in Faqarsar decreased from 62 hectares in 1966-67 to 24 hectares in 1971-72. Area sown more than once in the three villages registered an increase from 974 hectares in 1966-67 to 2114 hectares in 1971-72. Again, this increase was greater in Faqarsar than in the other two villages. Area sown more than once increased from 11.72 per cent of the geographical area in 1966-67

Table 2.1

Land utilization in the Selected Villages, 1966-67 through 1971-72.

(in hectares)

Details	1966-67	1967-68	1968-69	1969-70	1970-71	1971-72
Geographical Area	3722	3722	3722	3722	3722	3722
Area not available for cultivation.	370 (9.94)	370 (9.94)	370 (9.94)	370 (9.94)	370 (9.94)	370 (9.94)
Other uncultivated land excluding fallow land	10 (0.27)	8 (0.22)	6 (0.16)	6 (0.16)	3 (0.08)	2 (0.05)
Current fallow land	70 (1.88)	95 (2.55)	139 (3.74)	83 (2.23)	70 (1.88)	48 (1.29)
Net area sown	3272 (87.91)	3249 (87.29)	3207 (86.16)	3263 (87.67)	3279 (88.10)	3302 (88.72)
Area sown more than once	974 (26.17)	1195 (32.11)	1455 (39.36)	1821 (48.93)	1948 (52.34)	2114 (56.80)
Total cultivated area	3342 (89.79)	3344 (89.84)	3346 (89.90)	3346 (89.90)	3349 (89.98)	3350 (90.01)
Total cropped area	4246	4444	4672	5084	5227	5416

Note:- Figures in parentheses denote percentage to geographical area.

Table 2.2

Distribution of Area Irrigated by Various Sources, 1966-67 through 1971-72.

Year	Canal		Wells		Tubewells/ Pumping Sets		Net area Irrigated (hectares)	Percentage of irrigated area to net sown area
	Area Irrigated (hectares)	Percentage of area irrigated	Area Irrigated (hectares)	Percentage of area irrigated	Area Irrigated (hectares)	Percentage of area irrigated		
1966-67	2298	83.44	336	12.20	120	4.36	2754	84.17
1967-68	2290	80.92	253	8.94	287	10.14	2830	87.10
1968-69	2245	76.49	162	5.52	528	17.99	2935	91.52
1969-70	2212	73.15	44	1.45	768	25.40	3024	92.67
1970-71	2200	72.61	27	0.89	803	26.50	3030	92.41
1971-72	2179	72.05	22	0.73	823	27.22	3024	91.58

It was noted that the canal water supplied in village Faqarsar could be considered as assured and abundant - the village land being near the head of the canal water supply. The increase in area irrigated by tubewells/pumping sets in the other two villages, came to supplement canal irrigation and provide water, which was a necessary concomitant of successfully growing high-yielding varieties.

Cropping pattern

Table 2.3 gives the important shifts in the cropping pattern of the selected villages during the period 1966-67 through 1971-72. The semi-dwarf wheats occupied the predominant place in the cropping pattern of these villages. The area under these wheats increased from 1551 hectares in 1966-67 to 2577 hectares in 1971-72, which accounted for 36.53 and 47.58 per cent of the total cropped area during the corresponding period. The increased acreage under wheat came from increase in the intensity of cropping and the decrease in the area under wheat-gram, gram and barley. The area under wheat-gram, gram and barley decreased from 7.19, 3.67 and 1.67 per cent of the total cropped area in 1966-67 to 0.48, 0.89 and 0.20 per cent in 1971-72. This was bound to happen, because as irrigation expanded and fertilizer use increased, it was not profitable for the farmers to cultivate gram and barley, which paid much less than the high-yielding wheat varieties did.

Again, due to enhanced irrigational facilities, the area under paddy increased from the negligible proportion of 0.02 per cent of the total cropped area in 1966-67 to 4.86 per cent in 1971-72. The area under cotton (A), which was confined to village Faqarsar only, witnessed an increase from 367 hectares in 1966-67 to 906 hectares in 1971-72. This was an indication that the more remunerative crops, such as wheat,

Table 2.3

Cropping Pattern in the Selected Villages, 1966-67 through 1971-72.

Crops	1966-67	1967-68	1968-69	1969-70	1970-71	1971-72
Wheat	1551 (36.53)	1696 (38.16)	2013 (43.09)	2289 (45.02)	2452 (46.92)	2577 (47.58)
Gram	156 (3.67)	179 (4.03)	65 (1.39)	83 (1.63)	52 (0.99)	48 (0.89)
Wheat-Gram	305 (7.19)	195 (4.39)	127 (2.72)	97 (1.91)	19 (0.36)	26 (0.48)
Maize	323 (7.61)	342 (7.70)	346 (7.42)	539 (10.60)	468 (8.95..)	401 (7.40)
Paddy	1 (0.02)	2 (0.04)	7 (0.15)	71 (1.40)	197 (3.77)	263 (4.86)
Sugarcane	45 (1.06)	53 (1.19)	62 (1.33)	50 (0.98)	32 (0.61)	25 (0.46)
Cotton(A)	367 (8.64)	411 (9.25)	465 (9.95)	584 (11.49)	725 (13.87)	906 (16.73)
Cotton(D)	443 (10.43)	480 (10.80)	299 (6.40)	279 (5.49)	251 (4.80)	192 (3.54)
Bajra	165 (3.88)	104 (2.35)	145 (3.10)	206 (4.05)	200 (3.83)	159 (2.94)
Barley	71 (1.67)	140 (3.15)	74 (1.58)	117 (2.30)	91 (1.75)	11 (0.20)
Fodders	537 (12.65)	598 (13.45)	730 (15.62)	299 (5.88)	432 (8.26)	461 (8.51)
Other crops.	282 (6.64)	244 (5.49)	339 (7.25)	470 (9.25)	308 (5.89)	347 (6.41)
Total cropped area	4246 (100.00)	4444 (100.00)	4672 (100.00)	5084 (100.00)	5227 (100.00)	5416 (100.00)

Note:- Figures in parentheses denote percentages to the total cropped area.

paddy and cotton (A) had replaced the comparatively less remunerative crops, i.e., barley, gram etc. which were more suited to the dry farming conditions.

Intensity of cropping

Total cropped area, cultivated area and intensity of cropping in the selected villages is shown in Table 2.4. The overall intensity of cropping increased from 127.05 per cent in 1966-67 to 161.67 per cent in 1971-72. The increase was greater in Faqarsar than in the other two villages. It increased from 108.66 in 1966-67 to 168.36 per cent in 1971-72 in Faqarsar. This was due to the adequate irrigation facilities, adoption of the practice of sowing wheat in the standing cotton crop and introduction of high-yielding wheat varieties, which could be sown late(after harvesting the cotton crop) as compared to the indigenous varieties.

Average size of the operational holding

The average size of the operational holdings in the selected villages is shown in Table 2.5. It was hypothesized that the operational holding size would increase as a consequence of adoption of modern technology. However, the study showed that the average holding size decreased from 6.51, 8.40 and 7.93 hectares in 1966-67 to 5.78, 5.08 and 7.00 hectares in 1971-72 for Gill, Bhinder Kalan and Faqarsar respectively.

The decrease in average operational holding size in 1971-72 as compared to 1966-67 might have come from the separation of some of the joint holdings. It might also be due to the sale of land in the upper strata in the recent years for fear of further lowering the ceiling on holdings.

Table 2.4

Total cropped area, total cultivated area and Intensity of Cropping in the Selected Villages, 1966-67 through 1971-72.

Year	Gill			Bhinder Kalan			Fagarsar			Total		
	Total cropped area(hectares)	Total culti-vated area (hec)	Intensity of cropp-ing	Total cropped area(hec)	Total culti-vated area (hectares)	Intensity of cropp-ing.	Total cropped area (hec)	Total culti-vated area(hec)	Intensity of cropp-ing	Total cropped area (hect)	Total culti-vated area(hec)	Intensity of cropp-ing.
1966-67	893	679	131.52	1835	1266	144.94	1518	1397	108.66	4246	3342	127.05
1967-68	910	680	133.82	1837	1267	144.99	1697	1397	121.47	4444	3344	132.89
1968-69	932	680	137.06	1861	1269	146.65	1879	1397	134.50	4672	3346	139.63
1969-70	953	680	140.15	1931	1269	152.16	2200	1397	157.48	5084	3346	151.94
1970-71	987	683	144.51	1969	1269	155.16	2271	1397	162.56	5227	3349	156.08
1971-72	1038	684	151.75	2026	1269	159.65	2352	1397	168.36	5416	3350	161.67

Table 2.5

Average Size of the Operational Holding in the Selected Villages, 1966-67 and 1971-72.

Village	Upto 6 hectares.		6-9 hectares.		9-14 hectares		14-24 hectares.		24 hectares & above.		Overall average.	
	1966-67	1971-72	1966-67	1971-72	1966-67	1971-72	1966-67	1971-72	1966-67	1971-72	1966-67	1971-72
Gill	3.43	3.04	6.96	7.15	11.89	12.14	16.59	16.62	34.39	40.47	6.51	5.78
Bhindor Kalan.	3.97	3.12	7.23	7.36	10.90	11.09	18.75	19.51	59.68	31.37	8.40	5.08
Faqarsar	3.40	3.67	7.02	7.33	11.02	11.56	17.77	17.76	36.41	29.00	7.93	7.00

Wages of farm labour

The month-wise average daily wages(kind payments and meals converted into cash) of a casual male agricultural labourer in the different years are shown in Table 2.6. The wages for 1967-68 through 1969-70 were based on the average of the 15 villages covered in the "Studies in the Economics of Farm Management", whereas the wages for 1971-72 were based on the average of the three selected villages.

The average daily wages increased from Rs 5.55 in 1967-68 to Rs 7.24 in 1971-72. The wages were comparatively higher in the months of April, May and June. The highest wage of Rs 10.75 in 1971-72 came in May.

Co-operative credit/Service societies

In view of the increasing capital and credit needs associated with the adoption of high-yielding varieties, it would be useful to highlight the performance of co-operative credit/service societies in the selected villages. These societies were primarily engaged in providing fertilizers and other short term credit for the purchase of new seeds and payment of wages to farm labour etc. The performance of these societies is indicated in Tables 2.7 and 2.8.

The number of members in the societies consistently increased from 372 in 1966-67 to 513 in 1971-72. The short term cash loan per member increased from Rs 63.80 in 1966-67 to Rs 273.15 in 1971-72. Medium term cash loans were granted only in Bhinder Kalan.

The quantity of urea distributed increased from 272.5 quintals in 1966-67 to 1850 quintals in 1971-72. In other words, use of urea increased from 8 kgs to 55 kgs per cultivated hectare during the corresponding period.

Table 2.6

Average daily wages of a casual adult male Agricultural labourer in different months, 1967-68, 1968-69, 1969-70 and 1971-72.

(in Rs)

Month	1967-68	1968-69	1969-70	1971-72
July	6.60	6.14	5.32	6.00
August	4.25	5.70	5.28	6.25
September	4.37	5.58	5.65	6.50
October	4.48	5.01	6.41	7.33
November	4.64	5.43	6.33	7.25
December	5.30	5.28	5.48	6.75
January	5.05	5.37	5.23	6.17
February	5.05	5.36	5.71	6.50
March	6.22	5.94	5.87	6.25
April	7.47	6.73	8.02	8.50
May	7.13	6.46	9.71	10.75
June	6.47	7.65	8.11	8.67

Table 2.7

Fertilizer Distribution through Village Cooperative Societies in the Selected Villages 1966-67 through 1971-72.

(in [illegible]),

Fertilizers	1966-67		1967-68		1968-69		1969-70		1970-71		1971-72	
	Total Qty.	Per cultivated hec.	Total Qty.	Per cultivated hectare	Total Qty	Per cultivated hectare	Total Qty.	Per cultivated hectare	Total Qty	Per cultivated hectare	Total Qty.	Per cultivated hectare
CAN	2600	0.78	1576	0.47	2215	0.66	679	0.20	1656	0.49	2032.5	0.61
Ammonium Sulphate	300	0.09	415.5	0.12	495	0.15	259	0.08	139	0.04	165	0.05
Diammonium Phosphate	-	-	191.5	0.06	273.5	0.08	63	0.01	-	-	193	0.06
Urea	272.5	0.08	430	0.13	1455	0.43	907	0.27	1248	0.37	1850	0.55
Muriate of Potash	-	-	40	0.01	322	0.09	50	0.01	64	0.02	40	0.01
Ammonium Phosphate	-	-	49.5	0.01	40	0.1	-	-	-	-	5	0.001
Others	-	-	250	0.07	285	0.08	-	-	227	0.07.	433.	0.13

Table 2.8

Cash Loan Distributed through village co-operative credit Societies in the Selected Villages, 1966-67 through 1971-72.

Year	Number of members	Cash Loan (short term)	Loan per member	Cash Loan (medium term)	Loan per member
1966-67	372	23734	63.80	-	-
1967-68	452	92637	204.95	15600	34.51
1968-69	486	76375	157.15	21350	43.93
1969-70	494	236495	478.73	6750	13.66
1970-71	500	41579	83.16	10140	20.28
1971-72	513	140125	273.15	-	-

These societies did not distribute any diammonium phosphate, muriate of potash, ammonium phosphate and other fertilizers in 1966-67. But the distribution of these fertilizers increased to 193, 40, 5 and 433 quintals respectively in 1971-72. The distribution of CAN and ammonium sulphate, however, decreased from 2600 and 300 quintals in 1966-67 to 2032.5 and 165 quintals in 1971-72.

The Faqarsar co-operative society was relatively more efficient in providing short term cash credit and in distributing fertilizers as compared to the other two societies. This was made possible by a whole time, experienced and well-paid secretary and absence of factionalism in the society.

Technological developments

The mechanization of agriculture in the selected villages has proceeded at a rapid rate in the recent years. The number of tractors increased from 29 in 1966-67 to 74 in 1971-72(Table 2.9). The number of wheat threshers/drummies witnessed a four-fold increase during the corresponding period. The number of electric pumps and oil engines with pumping sets increased from 65 in 1966-67 to 372 in 1971-72.

Occupational characteristics of the rural population

According to the 1961 census figures, the population of the selected villages was 6008. The village-wise 1971 census figures were not available at the time of the enquiry. Hence the comparison of 1961 census figures was made with the data collected in the census schedule. According to this schedule, the total population of the selected villages was 6428 in 1971-72. The increased population in the decade affected per capita land and other resource availabilities. Per capita land availability decreased from 0.62 hectare in 1961 to 0.58 hectare in 1971-72.

Table 2.9

Distribution of Improved Farm Machinery & equipment in the Selected Villages, 1966-67 through 1971-72.

Name of Farm Machinery.	1966-67	1967-68	1968-69	1969-70	1970-71	1971-72
Tractors	29	37	42	63	72	74
Electric pumps	17	25	42	194	226	258
Oil engines	48	74	83	99	109	114
Cane crushers	6	6	7	9	9	9
Wheat threshers	42	46	35	125	154	171
Maize shellers (Power driven)	3	4	7	9	9	9
Improved harrows and cultivators.	37	42	68	101	103	106
Fertilizers and seed drills.	11	13	16	48	50	53

The percentage distribution of population under different livelihood classes at two points of time is shown in Table 2.10. The proportion of workers to the total population was 33.2 in 1961 and 33.6 in 1971-72. The percentage of workers actually engaged in agriculture increased from 21.2 in 1961 to 24.6 in 1971-72. It was not in consonance with economic theory, which stated that the proportion of population engaged in the primary industries decreased as development gained momentum. It was owing to the decrease in the number of workers engaged in household industry at Bhinder Kalan and Faqarsar. Many workers, who were engaged in 'Ban making' and 'Shoe-making' household industry, found their occupation unprofitable in face of the competition from the machine-made goods. They adopted agricultural labour as their profession. The proportion of workers engaged in household industry, therefore, decreased from 5.5 in 1961 to 2.5 in 1971-72, whereas it increased from 3.1 in 1961 to 7.6 in 1971-72 in case of agricultural labour. The proportion of population engaged in service in 1961 and 1971-72 formed 4.1 and 4.0 per cent of the workers in the selected villages.

Family size

The average family size in the selected villages is given in Table 2.11.

The average family size increased from 5.97 in 1961 to 6.67 in 1971-72. The average males per family increased from 3.29 to 3.57 and the average females per family from 2.68 to 3.10 during the corresponding period. The average family size during this period witnessed an increase in all the selected villages.

Table 2.10

Percentage Distribution of Population in different livelihood classes in the Selected Villages, 1961 and 1971-72.

Livelihood Class	Percentage to total population	
	1961	1971-72
1. Cultivators	18.1	17.0
2. Agri. Labourers	3.1	7.6
3. Mining, quarrying, live stock, forestry and plantation of orchards & allied services.	0.3	0.4
4. House hold industry.	5.5	2.5
5. Manufacturing otherthan house-hold industry.	0.2	0.2
6. Construction	0.9	0.8
7. Trade and Commerce	0.6	0.6
8. Transport, Storage & Communications.	0.4	0.5
9. Other Services	4.1	4.0
Non-workers	66.8	66.4
Total	100.00	100.00

Table 2.11

Average family size in the selected villages, 1961 and 1971-72 .

Average family size.	Bhinder Kalan		Faqarsar		Gill		Overall average.	
	1961	1971-72	1961	1971-72	1961	1971-72	1961	1971-72
1. Male	3.26	3.58	3.40	3.54	3.20	3.58	3.29	3.57
2. Female	2.57	2.88	2.77	3.13	2.70	3.28	2.68	3.10
Total:-	5.83	6.46	6.17	6.67	5.90	6.86	5.97	6.67

CHAPTER III

SOCIO-ECONOMIC CHARACTERISTICS OF THE SELECTED HOUSEHOLDS

The socio-economic characteristics of rural population influenced income, investment, consumption and savings. A study of these characteristics is necessary for their influence on these variables. This chapter is, therefore, devoted to a brief description of the socio-economic characteristics of the selected households.

Size of the holding

It was hypothesized that the average size of operational holdings would increase with the introduction of modern technology. The average farm size of the sample holdings marginally increased from 11.53 hectares in 1967-68 to 11.81 hectares in 1971-72(Table 3.1). This was due to the purchases of land in the recent years. The average size of owned land increased from 9.98 hectares in 1967-68 to 10.46 hectares in 1971-72. The percentage of owned land to operational holding increased from 86.56 to 88.57 during the corresponding period. It indicated that the farmers, finding farming to be a profitable business, made investment in land purchases in the recent years. This happened in the case of large holdings. Area owned, in their case, increased from 15.63 hectares in 1967-68 to 17.39, 17.81 and 18.08 hectares in 1968-69, 1969-70 and 1971-72 respectively(Appendix 3.1). The area leased out stood at 0.25 hectares in 1971-72, which was lower than 0.47 and 0.72 hectares in 1968-69 and 1969-70 respectively. This gave an increasing trend towards self-cultivation by landowners. The cultivated area under ownership cultivation increased from 84.58 per cent in 1967-68 to 86.45 per cent in 1971-72. The average area leased in was 1.60 hectares in 1971-72, as compared to 1.78, 1.55 and 1.01 hectares from 1967-68 through 1969-70 respectively.

Table 3.1

Average size of operational holding, 1967-68, 1968-69, 1969-70 and 1971-72.

(in Hectares)

Items	1967-68	1968-69	1969-70	1971-72
Area owned	9.98	9.67	10.22	10.46
Area leased in	1.78	1.55	1.01	1.60
Area leased out	0.23	0.47	0.72	0.25
Operational area	11.53	10.75	10.51	11.81
Area owned & under-self-cultivation.	9.75	9.20	9.50	10.21

Table 3.2

Distribution of holdings and cultivated area (hectares) according to the tenurial status, 1967-68, 1968-69, 1969-70 and 1971-72.

Year	Owner cultivated		Owner-cum-Tenant cultivated		Total	
	No. of holdings.	Cultivated area.	No. of holdings.	Cultivated area.	No. of holdings.	Cultivated area.
1967-68	20 (66.67)	223.75 (64.67)	10 (33.33)	122.25 (35.33)	30 (100.00)	346.00 (100.00)
1968-69	16 (53.33)	175.99 (54.56)	14 (46.67)	146.60 (45.44)	30 (100.00)	322.59 (100.00)
1969-70	21 (70.00)	219.96 (69.80)	9 (30.00)	95.19 (30.20)	30 (100.00)	315.15 (100.00)
1971-72	14 (46.67)	190.19 (53.67)	16 (53.33)	164.19 (46.33)	30 (100.00)	354.38 (100.00)

Note:- The figures in parentheses denote percentages of their respective totals.

The small and medium holdings leased in land to make their holdings viable. Average area leased in increased from 0.21 and 1.30 hectares in 1967-68 to 0.40 and 1.49 hectares in 1971-72 for small and medium holdings respectively. Whereas large holders could purchase land due to their resourcefulness, the small holdings resorted to leasing in of land. This was due to the rapid appreciation in land values, which made it difficult for the small holders to buy land.

Tenurial status

Table 3.2 indicated that purely owner cultivators decreased from 66.67 per cent in 1967-68 to 46.67 per cent in 1971-72. On the other hand, the percentage of owner-cum-tenant cultivators to total cultivators increased from 33.33 to 53.33 during the corresponding period. This was due to the decline in the percentage of owner cultivators in case of small and medium holdings. The percentage of owned holdings to total holdings decreased from 71.43 and 71.43 in 1967-68 to 50.00 and 38.46 per cent in 1971-72 for small and medium holdings respectively (Appendix 3.2). This led to a relative decrease in the cultivated area from 64.67 in 1967-68 to 53.67 in 1971-72 under pure ownership cultivation indicating the increasing competition for leasing in land, following the adoption of new technology.

The area under cash rent increased from 31.98 per cent of the total in 1967-68 to 73.98 per cent in 1971-72. On the other hand, there was a decline in the area under kind rent from 68.02 in 1967-68 to 26.02 per cent in 1971-72 (Table 3.3).

Cropping pattern

The cropping pattern of the selected holdings for various years is depicted in Table 3.4. Wheat(high-yielding varieties) occupied a

Table 3.3

Percentage of area under cash and kind rents, 1967-68, 1968-69, 1969-70 and 1971-72.

Year	Under cash rent		Under kind rent		Total	
	Area	Percentage	Area	Percentage	Area	Percentage
1967-68	17.06	31.98	36.28	68.02	53.34	100.00
1968-69	23.51	50.57	22.98	49.43	46.49	100.00
1969-70	18.01	59.52	12.25	40.48	30.26	100.00
1971-72	35.62	73.98	12.53	26.02	48.15	100.00

Table 3.4

Cropping Pattern of the Selected Holdings, 1967-68, 1968-69, 1969-70 and 1971-72.

(in hectares)

Crop	1967-68	1968-69	1969-70	1971-72
Paddy	0.46 (0.09)	3.46 (0.69)	4.00 (0.87)	38.78 (7.29)
Sugarcane	5.37 (1.06)	4.65 (0.93)	6.23 (1.36)	1.25 (0.23)
Cotton(D)	27.51 (5.43)	25.70 (5.12)	23.04 (5.02)	26.55 (4.99)
Cotton (A)	49.72 (9.82)	46.95 (9.36)	38.64 (8.41)	80.59 (15.15)
Bajra	17.04 (3.36)	24.61 (4.91)	31.66 (6.89)	12.93 (2.43)
Oilseeds	7.54 (1.49)	3.22 (0.64)	5.14 (1.12)	4.44 (0.84)
Maize (D)	32.29 (6.37)	43.54 (8.68)	20.52 (4.47)	18.87 (3.55)
Maize (H)	- -	8.97 (1.79)	13.38 (2.91)	7.28 (1.37)
Pulses	- -	26.58 (5.30)	3.88 (0.85)	0.40 (0.08)
Wheat (HYV)	76.12 (15.03)	194.27 (38.72)	214.32 (46.67)	259.54 (48.79)
Wheat (D)	129.75 (25.62)	10.32 (2.06)	5.19 (1.13)	- -
Barley.	13.67 (2.70)	3.73 (0.74)	0.14 (0.03)	0.81 (0.15)
Wheat-gram	11.22 (2.22)	9.88 (1.97)	8.18 (1.78)	2.83 (0.53)
Gram	34.51 (6.81)	10.65 (2.12)	5.38 (1.17)	2.82 (0.53)
Fodders.	74.34 (14.68)	74.27 (14.80)	68.69 (14.96)	71.98 (13.53)
Other crops.	26.93 (5.32)	10.88 (2.17)	10.84 (2.36)	2.86 (0.54)
Total cropped area.	506.47 (100.00)	501.68 (100.00)	459.23 (100.00)	531.93 (100.00)

Note:- Figures in parentheses denote percentages to the total cropped area .

predominant place in the cropping pattern of the selected holdings. The percentage of area under wheat (HYV) to the total cropped area increased from 15.03 in 1967-68 to 48.79 in 1971-72. This was due to the increase in the intensity of cropping and to the decline in area under desi wheat, wheat-gram, barley and gram crops. The cultivation of desi wheat did not find any place in the cropping pattern of the selected holdings in 1971-72. The percentage of area under wheat-gram, barley and gram decreased from 2.22, 2.70 and 6.81 in 1967-68 to 0.53, 0.15 and 0.53 in 1971-72. The area under pulses also decreased from 26.58 hectares in 1968-69 to 0.40 hectare in 1971-72. The percentage of area under pulses to total cropped area decreased from 5.30 to 0.08 during the corresponding period. The area under cotton (A) and paddy witnessed an increase during this period. The percentage of area under these crops increased from 0.09 and 9.82 in 1967-68 to 7.29 and 15.15 per cent respectively in 1971-72. The area under bajra and maize, however, decreased during this period.

The cropping pattern of different years indicated the relative profitability of various enterprises. The important rotations in practice were paddy followed by wheat and American cotton followed by wheat. The cotton (A) followed by wheat rotation was becoming popular with the introduction of high-yielding wheat varieties, which could be sown after the harvesting of the cotton crop. The paddy-wheat rotation became popular due to the expanded irrigation facilities and increased use of modern inputs.

Intensity of cropping

The intensity of cropping of the selected holdings for various years is presented in Table 3.5. It was hypothesized that the intensity of cropping increased with the availability of better

irrigation facilities and modern inputs. Table 3.5 shows that the intensity of cropping increased from 146.38 in 1967-68 to 150.10 in 1971-72.

Table 3.5

Intensity of cropping of the selected holdings, 1967-68, 1968-69, 1969-70 and 1971-72.

Year	Total cropped area	Total cultivated area	Intensity of cropping
1967-68	506.47	346.00	146.38
1968-69	501.68	322.59	155.52
1969-70	459.23	315.15	145.72
1971-72	531.93	354.38	150.10

It was hypothesized that a relationship existed between adoption of the new seed varieties and size of the farm. The percentage of cultivators growing high-yielding and indigenous varieties of wheat in various years is presented in Table 3.6.

The percentage of cultivators growing high yielding varieties only consistently increased from 14.29 in 1967-68 to 42.86, 88.89 and 100.00 in 1968-69, 1969-70 and 1971-72 respectively in case of small holdings. This percentage increased from 11.11 in 1967-68 to 77.78, 80.00 and 100.00 in the subsequent years in case of large farmers. In 1971-72, all the farmers were growing high-yielding varieties, with no area under indigenous varieties. Analysis of variance test was applied to test the hypothesis that adoption was related to farm size. 'F' value between adoption and farm size in 1967-68 came out to 0.3796, which was not significant. This means that farm size had no effect on adoption.

Table 3.6

Percentage of cultivators growing high yielding and indigenous - varieties, 1967-68, 1968-69, 1969-70 and 1971-72.

Nature of the enterprise	Category	Percentage of cultivators.			
		1967-68	1968-69	1969-70	1971-72
H.Y.V. only	S	14.29	42.86	88.89	100.00
	M	7.14	78.57	81.82	100.00
	L	11.11	77.78	80.00	100.00
Both high yielding and indigenous varieties	S	85.71	57.14	11.11	-
	M	85.72	21.43	18.18	-
	L	88.89	22.22	20.00	-
Indigenous varieties only.	S	-	-	-	-
	M	7.14	-	-	-
	L	-	-	-	-

Hence the hypothesis that adoption was related to farm size, was rejected.

Again, it was hypothesized that after the experimental period of two, three seasons, the new varieties were adopted to a greater extent by small farmers than by large farmers. The percentage of area under high-yielding varieties of wheat to total area under wheat for various farm size-groups is depicted in Table 3.7.

Table 3.7

Proportion of area under high-yielding varieties of wheat to total area under wheat, 1967-68, 1968-69, 1969-70 and 1971-72.

Category	Proportion of area			
	1967-68	1968-69	1969-70	1971-72
Small	54.99	86.94	94.64	100.00
Medium	42.08	92.70	100.00	100.00
Large	44.12	93.79	98.20	100.00

The proportion of area under high-yielding varieties to total area under wheat was 54.99, 42.08 and 44.12 for small, medium and large holdings respectively in 1967-68. It increased to 86.94, 92.70 and 93.79 in 1968-69 and to 94.64, 100.00 and 98.20 in 1969-70. In 1971-72, this proportion was 100.00 per cent for all the three sized holdings. Analysis of variance test was applied to the data of adoption by various farm size groups for 1968-69 and 1969-70. The 'F' values between adoption and farm size worked out to be 0.8269 and 1.2100 for 1968-69 and 1969-70 respectively, which were insignificant. This means that adoption had no relation with farm size even in the post-experimental period.

It was hypothesized that irrigation availability was a factor underlying the relation between adoption and farm size. The percentage of irrigated area to operational area for various farm size groups is given in Table 3.8.

Table 3.8

Proportion of irrigated area to operational area, 1967-68, 1968-69, 1969-70 and 1971-72

Category	Proportion to operational area			
	1967-68	1968-69	1969-70	1971-72
Small	87.51	88.26	89.23	90.22
Medium	88.27	96.77	99.68	95.64
Large	88.53	95.56	96.96	97.52

The proportion of irrigated area to operational area worked out to be 87.51, 88.27 and 88.53 for small, medium and large holdings respectively in 1967-68. This proportion increased to 90.22, 95.64 and 97.52 for these three categories of holdings in 1971-72 and indicated adequate irrigation availability for successful execution of the high-yielding varieties programme. Analysis of variance test was applied to the data for 1967-68 through 1969-70. The 'F' values between irrigation availability and adoption by various farm size groups worked out to be .6731, .4295 and 2.1960 from 1967-68 through 1969-70, which were not significant. In 1971-72, the adoption was 100 per cent by different farm size groups irrespective of the differences in irrigation availability.

Size of the family

The size of the family was analysed with regard to its influence on the resource-use pattern of the selected holdings. The

increased family size might have a retarding influence, if it led to a diminution in capital formation by reducing the margin between income and consumption.

The average family size increased from 9.1 in 1967-68 to 10.7 in 1971-72(Table 3.9).

Table 3.9

Average family size of the selected holdings, 1967-68, 1968-69, 1969-70 and 1971-72

Year	Adults		Children	Total
	Male	Female		
1967-68	2.7	2.3	4.1	9.1
1968-69	3.3	2.6	3.5	9.4
1969-70	2.7	2.6	3.6	8.9
1971-72	3.9	3.2	3.6	10.7

The composition of population, however, indicated that the proportion of adult males increased from 29.67 in 1967-68 to 36.45 in 1971-72. The proportion of children in the population decreased from 45.05 to 33.64 during the corresponding period. The increased family size led to an increase in the labour force of the selected holdings.

Number of earners

The average number of earners in agricultural and non-agricultural occupations is depicted in Table 3.10. It was hypothesized that with increased pressure of land due to high man-land ratio, a shift would take place from the agricultural sector to secondary and tertiary sectors.

Table 3.10

Average number of earners in the selected holdings, 1967-68, 1968-69, 1969-70 and 1971-72

Year	Agriculture			Non-agriculture			Total		
	Male	Female	Children above 12 years	Male	Female	Children above 12 yrs	Male	Female	Children above 12 yrs
1967-68	2.2	0.1	0.2	0.1	-	-	2.3	0.1	0.2
1968-69	2.6	0.2	0.3	0.1	-	-	2.7	0.2	0.3
1969-70	2.3	-	-	0.1	-	-	2.4	-	-
1971-72	3.0	-	0.3	0.5	-	-	3.5	-	0.3

The average number of male earners in agriculture increased from 2.2 in 1967-68 to 3.0 in 1971-72 owing to the increased labour force resulting from the population growth. This led, however, to the withdrawal of females from participation into agricultural work. It indicated the change in the employment pattern of home workers, which was further reinforced by increased incomes in the recent years. The number of male earners in non-agricultural occupations increased from 0.1 in 1967-68 to 0.5 in 1971-72. This was due to the adoption of service and other non-farm occupations by the family members after education. This trend helped in supplementing the farm incomes.

Education of the Head

During 1971-72, no head of the family improved his academic qualifications. The distribution of the head of the family by the level of education is shown in Table 3.11.

Table 3.11

Educational level of the Head of the family, 1971-72.

Educational level	No. of Heads	Percentage to total
Illiterate	17	56.66
Literate	2	6.67
Primary	2	6.67
Middle	6	20.00
Matric	3	10.00
Total	30	100.00

It was found that 56.66 per cent of the heads were functionally illiterates. The percentage of heads, who had qualifications upto Matric standard was only 10.00 per cent.

Number of students

It was hypothesized that the cultivators would invest an increasing amount in education of their children owing to the increased incomes in the recent years. The number of students of the selected holdings in various years is presented in Table 3.12.

Table 3.12

Number of students of the selected holdings, 1967-68, 1968-69, 1969-70 and 1971-72

Educational level	1967-68	1968-69	1969-70	1971-72
Primary	33	37	49	39
Middle	17	11	9	11
Matric	5	3	3	2
Graduate	2	-	1	4
Postgraduate	-	-	-	2
Total	57	51	62	58

The number of students came to 58 in 1971-72 as compared to 57, 51 and 62 from 1967-68 through 1969-70 respectively. The percentage of students in graduate and postgraduate classes to total students increased from 3.51 in 1967-68 to 10.34 in 1971-72. It indicated that the cultivators also invested in higher education owing to the increased incomes in the recent years.

Socio-economic characteristics of the selected labour households

Size of the family: The average size of the family of the selected labour households came out to 5.82 in 1971-72(Table 3.13).

Table 3.13

Average family size of the labour households, 1971-72.

Village	Adults		Children		Total		Total
	Male	Female	Male	Female	Male	Female	Male+Female
Gill	1.53	1.00	1.07	1.47	2.60	2.47	5.07
Bhinder Kalan	2.00	1.47	1.60	0.93	3.60	2.40	6.00
Faqarsar	1;53	1.27	1.87	1.73	3.40	3.00	6.40
Overall average	1.69	1.25	1.51	1.37	3.20	2.62	5.82

The average size of the family was higher in Faqarsar than Gill and Bhinder Kalan. However, the average family size in case of labour households was much lower than that of the cultivators in 1971-72. This was due to the inherent characteristics of the labour households. Most of the labour households got separated immediately after marriage and soon after a member began to earn his livelihood.

No problem of optimum resource use arose in their case as in the case of cultivators. The proportion of male adults to average family size was 29.04 in case of labour households and 36.45 in case of cultivators. The proportion of adult males to average family size was higher in Bhinder Kalan than in Gill and Faqarsar. The proportion of children to average family size was higher in Faqarsar than Gill and Bhinder Kalan. It was 49.48 in case of labour households and 33.64 per cent in case of cultivators in 1971-72.

Number of earners

The number of earners, along with the nature of occupation, is presented in Table 3.14.

Table 3.14

Average number of earners of the selected labour households, 1971-72

Occupation	Gill	Bhinder Kalan	Faqarsar	Overall average
Agri. labour	1.33	1.87	1.60	1.60
Service	-	0.33	0.07	0.13
Livestock rearing	-	0.20	-	0.07
Total	1.33	2.40	1.67	1.80

The average number of earners came to 1.80 in 1971-72. Agricultural labour was the main profession adopted by 88.89 per cent of the earners. Service occupied the second place, and accounted for 7.22 per cent of the earners. The percentage of earners engaged in livestock rearing to total earners was 3.89. The number of earners was higher in Bhinder Kalan than in Gill and Faqarsar. The average

number of earners in case of labour households was about one-half to that of cultivators. However, the proportion of the number of earners to family size was 30.93 and 35.51 in case of labour and cultivating households respectively in 1971-72. In case of labour households, about 66.67 per cent of the earners, who adopted service as their occupation, followed it after 1967-68. It indicated that farm labour was partly shifting to off-farm occupation. Of the 15 earners, who followed some occupation after 1967-68, 66.67 per cent adopted agricultural labour, 26.67 per cent service and 6.66 per cent livestock rearing. In addition to this, females in about 60.00 per cent of labour households supplemented household incomes by picking up corn stalks, picking of cotton and other labour.

Education of the Head

Educational level of the head of the labour households is presented in Table 3.15.

Table 3.15

Educational level of the head,1971-72

Educational level	Gill	Bhinder Kalan	Faqarsar	Total
Illiterate	15	12	8	35
Primary	-	1	6	7
Middle	-	-	1	1
Matric	-	2	-	2
Total	15	15	15	45

The educational level of the head presented a dismal picture. About 78 per cent of the heads did not receive any formal education.

The percentage of heads having qualifications upto Matric standard was only 4.44. The lower educational qualifications of the heads led to the lack of consciousness among them for improving their socio-economic status.

Number of students

The number of students in various classes is presented in Table 3.16.

Table 3.16

Number of students of the selected labour households, 1971-72

Educational level	Gill	Bhinder Kalan	Faqarsar	Total
Primary	1	-	9	10
Middle	-	4	-	4
Matric	-	-	-	-
Graduate	-	-	1	1
Total	1	4	10	15

The proportion of students to total population was 5.73 in case of labour households and 18.07 in case of cultivators in 1971-72. The proportion of students, who got higher education was 6.67 and 10.34 for labour and cultivating households respectively in 1971-72. It indicated that the labour households gave relatively lesser attention to the education of their children.

CHAPTER IV

FARM FAMILY ASSETS

The composition of assets shows the importance of various farm and non-farm investment items. The addition to tangible assets of a farm family, over a period of time, also pointed to the magnitude of capital formation. Capital formation in any society was the product of increased production and implied that not all the increased production was used up for immediate consumption, but the society directed a part of it to the creation of capital goods.

It was considered that the introduction of modern technology might lead to the change in emphasis from traditional type of investment to the investment in tangible reproducible assets. Such type of investment behaviour on the part of farm families might help in building up the infrastructure in agriculture.

An addition to the farm family assets could be made either through savings or through borrowings. Hence the magnitude of financial assets and liabilities over a period of time was also accounted for.

To study the composition of farm family assets, different components were classified into the following categories :

1. Farm assets : Farm assets included value of owned land, irrigation structures, farm buildings, major implements including farm machinery, minor implements and draught, milch and other animals.

2. Household assets : These included value of dwelling houses and consumer durable goods.

3. Non-farm assets : These included transport and asset formed in the shape of subsidiary occupation etc.

Average farm family assets : The value of average farm family assets came to Rs 284820.90 in 1971-72 as compared to Rs 164863.62 128475.92

and 179666.62 from 1967-68 through 1969-70 respectively(Table 4.1). The increase in the value of assets in 1971-72 came mainly from the appreciation in land values, following the introduction of high-yielding varieties. The percentage growth in the value of assets was 72.76 from 1967-68 to 1971-72.

Farm assets : Average farm assets worked out to be Rs 271766.07 in 1971-72 as compared to Rs 156508.46, 120666.48 and 172144.06 from 1967-68 through 1969-70 respectively. The increase in the value of farm assets in 1971-72 mainly came from the appreciation in land values and the purchase of land. Average size of owned land was estimated at 10.46 hectares in 1971-72 as against 9.98, 9.67 and 10.22 hectares from 1967-68 through 1969-70 respectively. The value of land assets, therefore, came to Rs 241616.66 in 1971-72 as compared to Rs 137585.27, 104920.78 and 157277.70 from 1967-68 through 1969-70 respectively. The percentage share of farm assets to farm family assets increased from 94.93 in 1967-68 to 95.42 in 1971-72. This was again owing to the increase in the value of land assets, which accounted for 83.45 and 84.83 per cent of the farm family assets during the corresponding period.

It was hypothesized that as an economy expanded, forms of capital other than land gained increased importance. The study showed that the value of farm assets, excluding land, amounted to Rs 30149.41 in 1971-72 as compared to Rs 18923.19, 15745.70 and 14866.36 from 1967-68 through 1969-70 respectively.

It was also hypothesized that the value of irrigation structure and major implements(especially farm machinery) would increase as a consequence of the introduction of high-yielding varieties. The study showed that the value of irrigation structure increased from Rs 2498.33 in 1967-68 to Rs 11133.67 in 1971-72. The percentage value of irrigation

Table 4.1

Per holding value of Farm Family Assets, 1967-68, 1968-69, 1969-70 and 1971-72. (in Rs)

Items	1967-68	1968-69	1969-70	1971-72
A Farm Assets				
1. Land	137585.27 (83.45)	104920.78 (81.67)	157277.70 (87.54)	241616.66 (84.83)
2. Farm Buildings	4362.67 (2.65)	3994.50 (3.11)	3737.97 (2.08)	4078.33 (1.43)
3. Irrigation Structure	2498.33 (1.52)	2297.50 (1.78)	2378.74 (1.32)	11133.67 (3.92)
4. Implements				
a) Major	6100.43 (3.70)	5269.10 (4.10)	5050.60 (2.81)	8686.10 (3.05)
b) Minor	759.30 (0.46)	255.10 (0.20)	280.63 (0.15)	199.20 (0.07)
5. Draught animals	2215.83 (1.34)	1606.90 (1.25)	1292.40 (0.73)	2085.00 (0.73)
6. Milch animals	2401.50 (1.46)	1783.50 (1.39)	1509.09 (0.84)	3103.34 (1.09)
7. Other animals	585.13 (0.35)	539.10 (0.42)	616.93 (0.35)	863.77 (0.30)
Sub-Total (A)	156508.46 (94.93)	120666.48 (93.92)	172144.06 (95.82)	271766.07 (95.42)
B. Household Assets				
1. Dwelling Houses	7367.33 (4.47)	6452.20 (5.02)	5703.73 (3.17)	10031.67 (3.52)
2. Consumer durable goods.	754.50 (0.46)	1090.57 (0.85)	1518.83 (0.84)	1889.83 (0.66)
Sub Total (B)	8121.83 (4.93)	7542.77 (5.87)	7222.56 (4.01)	11921.50 (4.18)
C. Non-Farm Assets				
1. Transport	-	-	-	800.00 (0.28)
2, Others	233.33 (0.14)	266.67 (0.21)	300.00 (0.17)	333.33 (0.12)
Sub Total (C)	233.33 (0.14)	266.67 (0.21)	300.00 (0.17)	1133.33 (0.40)
Grand total (A+B+C)	164863.62 (100.00)	128475.92 (100.00)	179666.62 (100.00)	284820.90 (100.00)
D. Financial Assets	1758.83 (1.07)	1751.00 (1.36)	3746.67 (2.09)	3829.57 (1.34)
E. Financial Liabilities	394.60 (0.24)	1231.30 (0.96)	2007.84 (1.12)	4748.13 (1.67)

structure to total farm assets(excluding land) increased from 13.20 to 36.93 during the corresponding period(Table 4.2).

The value of major implements(including farm machinery) increased from Rs 6100.43 in 1967-68 to Rs 8686.10 in 1971-72. However, the percentage share of major implements to the total farm assets decreased from 32.24 to 28.81 during the corresponding period. It was due to the relatively greater increase in the value of other farm assets.

The value of draught animals decreased from Rs 2215.83 in 1967-68 to Rs 2085.00 in 1971-72. The percentage share of draught animals to total farm assets decreased from 11.71 to 6.92 during the corresponding period. This was owing to the replacement of bullock power by farm machinery in the recent years. The value of milch animals increased from Rs 2401.50 in 1967-68 to 3103.34 in 1971-72, indicating the higher investment for development of dairying.

The value of farm assets per hectare amounted to Rs 22311.86 in 1971-72 as compared to Rs 13570.11, 11218.60 and 16388.29 from 1967-68 through 1969-70 respectively(Table 4.3). The increase in the value of farm assets per hectare in 1971-72 came mostly from increase in the value of land assets per hectare. The value of farm assets per hectare (excluding land) accounted for Rs 1838.76 in 1971-72 as against Rs 1640.75, 1461.22 and 1416.59 from 1967-68 through 1969-70 respectively(Table 4.4). The value of irrigation structure, major implements and milch animals per hectare witnessed an increase in 1971-72, as compared to 1967-68, confirming the trend indicated earlier. The value of draught animals and farm buildings per hectare decreased during the corresponding period.

Table 4.2

Pre Holding value of farm assets (excluding land)
1967-68, 1968-69, 1969-70, and 1971-72

Items	1967-68	1968-69	1969-70	1971-72
1. Farm buildings	4362.67 (23.05)	3994.50 (25.37)	3737.97 (25.15)	4078.33 (13.53)
2. Irrigation structure	2493.33 (13.20)	2297.50 (14.59)	2378.74 (16.00)	11133.67 (36.93)
3. Implements				
a) Major	6100.43 (32.24)	5269.10 (33.46)	5050.60 (33.97)	8686.10 (28.81)
b) Minor	759.30 (4.02)	255.10 (1.62)	280.63 (1.89)	199.20 (0.66)
4. Draught animals	2215.83 (11.71)	1606.90 (10.21)	1292.40 (8.69)	2085.00 (6.92)
5. Milch animals	2401.50 (12.69)	1783.50 (11.33)	1509.09 (10.15)	3103.34 (10.29)
6. Other animals	585.13 (3.09)	539.10 (3.42)	616.93 (4.15)	863.77 (2.86)
Total	18923.19 (100.00)	15745.70 (100.00)	14866.36 (100.00)	30149.41 (100.00)

Table 4.3

Per hectare value of farm family assets, 1967-68, 1968-69, 1969-70 & 1971-72

Items	1967-68	1968-69	1969-70	1971-72
A. Farm Assets				
1. Land	11929.36	9757.38	14971.70	20454.03
2. Farm buildings	378.27	371.48	355.83	345.25
3. Irrigation structure	216.62	213.66	226.43	249.19
4. Implements				
a) Major	528.94	490.01	480.78	735.32
b) Minor	65.84	23.73	26.71	16.86
5. Draught animals	192.12	149.44	123.03	176.51
6. Milch animals	208.22	162.76	145.08	262.71
7. Other animals	50.74	50.14	58.73	71.99
Sub Total (A)	13570.11	11218.60	16388.29	22311.86
B. Household Assets				
1. Dwelling houses	638.78	600.03	542.95	849.23
2. Consumer durable goods	65.42	101.42	144.58	159.98
Sub Total (B)	704.20	701.45	687.53	1009.21
C. Non-Farm Assets				
1. Transport	-	-	-	67.72
2. Others	20.23	24.80	28.56	28.22
Sub Total (C)	20.23	24.80	28.56	95.94
Grand Total (A+B+C)	14294.54	11944.85	17104.38	23417.01
D. Financial Assets	152.50	162.84	356.66	324.19
E. Financial Liabilities	34.21	114.51	191.13	401.95

Table 4.4

Per hectare value of farm assets (excluding land), 1967-68, 1968-69, 1969-70 and 1971-72

Items	1967-68	1968-69	1969-70	1971-72
1. Farm buildings	378.27	371.48	355.83	345.25
2. Irrigation structure	216.62	213.66	226.43	230.12
3. Implements				
a) Major	528.94	490.01	480.78	735.32
b) Minor	65.84	23.73	26.71	16.86
4. Draught animals	192.12	149.44	123.03	176.51
5. Milch animals	208.22	162.76	145.08	262.71
6. Other animals	50.74	50.14	58.73	71.99
Total	1640.75	1461.22	1416.59	1838.76

Household assets : Average value of household assets came to Rs 11921.50 in 1971-72 as compared to Rs 8121.83, 7542.77 and 7222.56 from 1967-68 through 1969-70 respectively. The percentage share of household assets to total farm family assets was 4.18 in 1971-72 as against 4.87, 5.87 and 4.01 from 1967-68 through 1969-70 respectively. The decrease in percentage share of household assets to total farm family assets in 1971-72, as compared to 1967-68 and 1968-69, was due to the relatively higher value of land assets in the total assets. The percentage growth in household assets was 46.78 from 1967-68 to 1971-72. The value of consumer durable goods consistently increased from Rs 754.50 in 1967-68 to Rs 1889.83 in 1971-72. Its relative importance in the total farm family assets also increased during the corresponding period. This was an indication that, alongwith the development of infrastructure on the farm, farm families also increased their expenditure on items of social status in the recent years.

Non-farm assets : The value of non-farm assets amounted to Rs 1133.33 in 1971-72, as compared to Rs 233.33, 266.67 and 300.00 from 1967-68 through 1969-70 respectively. The percentage value of non-farm assets to total farm family assets increased from 0.14 in 1967-68 to 0.40 in 1971-72. This was due to some investment in transport in 1971-72 by some of the selected farm families. The value of transport assets amounted to Rs 800.00 in 1971-72 as compared to nil in the previous years. This indicated the tendency of farm families to invest outside agriculture for supplementing their farm incomes.

Financial assets : Average value of financial assets increased from Rs 1758.83 in 1967-68 to Rs 3829.57 in 1971-72. The percentage share of financial assets to total farm family assets increased from 1.07 to 1.34

during the corresponding period. Percentage increase in the amount of financial assets in 1971-72 over 1967-68 was 117.73. The higher value of financial assets in 1971-72, as compared to preceding years, was due to agriculture becoming a little more capital intensive and necessitating greater liquidity. The financial assets per hectare also increased over a period of time. The value of financial assets per hectare increased from Rs 152.50 in 1967-68 to Rs 324.19 in 1971-72.

Financial liabilities : Average amount of financial liabilities came out to be Rs 4748.13 in 1971-72 as compared to Rs 394.60, 1231.30 and 2007.84 from 1967-68 through 1969-70 respectively. The percentage of financial liabilities to total farm families assets also increased from 0.24 in 1967-68 to 1.67 in 1971-72. The percentage increase in amount of financial liabilities was 1103.28 during the corresponding period. Higher amount of financial liabilities in 1971-72, as compared to preceding years, was due to higher investment of farm families in the adoption of new technology, which led to increase in borrowings, both from institutional and non-institutional sources. The financial liabilities per hectare also showed an increasing trend over this period. The amount of financial liabilities per hectare came to Rs 401.95 in 1971-72 as compared to Rs 34.21, 114.51 and 191.13 from 1967-68 through 1969-70 respectively.

Farm family assets and farm size : The per holding value of farm family assets for different sized holdings is presented in Table 4.5. Farm family assets per holding increased from Rs 75638.48, 157538.92 and 245654.97 in 1967-68 to Rs 113474.96, 200705.54 and 477691.35 in 1971-72 for small, medium and large holdings respectively. The percentage increase in the value of farm family assets worked out to be 50.02, 27.40 and 94.46 for the three farm size groups respectively during the corresponding period. This was mainly due to the appreciation in land

Table 4.5

Per holding value of farm family assets for different sized holdings, 1967-68, 1968-69, 1969-70 and 1971-72.

Items	1967-68			1968-69			1969-70			1971-72		
Farm Assets.	Small	Medium	Large	Small	Medium	Large	Small	Medium	Large	Small	Medium	Large
1. Land	62466.00 (82.58)	136884.64 (86.89)	197101.24 (80.25)	33375.32 (74.87)	107807.31 (85.63)	156077.10 (78.93)	74577.98 (86.83)	139873.82 (88.22)	250851.70 (87.32)	90333.30 (79.61)	169230.77 (84.32)	409681.81 (85.76)
2. Farm buildings.	2071.43 (2.74)	3303.58 (2.10)	7792.22 (3.17)	850.14 (1.91)	3305.71 (2.63)	7511.56 (3.80)	1260.33 (1.47)	3880.68 (2.45)	5811.30 (2.02)	1628.33 (1.43)	2767.69 (1.38)	6963.63 (1.46)
3. Irrigation structure	3128.57 (4.14)	2217.86 (1.41)	2144.44 (0.96)	2344.72 (5.26)	2242.57 (1.78)	2346.22 (1.19)	2268.89 (2.64)	2331.16 (1.47)	2529.92 (0.88)	7283.33 (6.59)	7953.85 (3.96)	16882.72 (3.53)
4. Implements												
a) Major	507.14 (0.67)	3250.56 (2.06)	14883.89 (6.06)	245.71 (0.55)	2789.50 (2.23)	13033.33 (6.59)	363.56 (0.42)	3899.71 (2.46)	10534.90 (3.67)	834.17 (0.74)	3638.08 (1.81)	18934.83 (3.96)
b) Minor	173.57 (0.23)	216.79 (0.14)	2058.78 (0.84)	160.00 (0.36)	245.86 (0.20)	343.44 (0.17)	189.22 (0.22)	285.64 (0.18)	357.40 (0.12)	135.83 (0.12)	189.33 (0.09)	245.36 (0.05)
5. Draught Animals.	1271.43 (1.68)	2391.07 (1.52)	2677.78 (1.09)	1024.00 (2.30)	1829.43 (1.43)	1714.11 (0.87)	735.00 (0.86)	1583.09 (1.00)	1474.30 (0.51)	1366.67 (1.20)	2015.38 (1.01)	2559.09 (0.54)
6. Milch animals	1400.00 (1.85)	2180.36 (1.38)	3524.44 (1.45)	1088.00 (2.44)	1690.50 (1.34)	2469.11 (1.25)	1029.44 (1.20)	1372.55 (0.86)	2090.97 (0.73)	1458.33 (1.29)	3184.62 (1.59)	3904.54 (0.82)
7. Other animals.	202.14 (0.27)	693.57 (0.44)	714.33 (0.29)	356.71 (0.80)	490.79 (0.39)	756.11 (0.38)	377.89 (0.44)	592.18 (0.37)	859.30 (0.30)	831.67 (0.73)	834.62 (0.42)	915.74 (0.19)
Sub Total(A)	71220.28 (94.16)	151138.43 (95.94)	231197.12 (94.11)	39444.60 (88.49)	120401.67 (95.63)	184250.98 (93.18)	80802.31 (94.08)	153818.43 (97.01)	274509.79 (95.55)	104071.63 (91.71)	189814.39 (94.58)	460087.72 (96.31)

Contd/-

Table 4.5 (Contd.)

Per holding value of farm family assets for different sized holdings, 1967-68, 1968-69, 1969-70 & 1971-72.

Items	1967-68			1968-69			1969-70			1971-72		
B. Household Assets.	Small	Medium	Large	Small	Medium	Large	Small	Medium	Large	Small	Medium	Large
1. Dwelling houses.	3992.86 (5.28)	5749.99 (3.65)	12507.78 (5.09)	4472.43 (10.03)	4507.29 (3.58)	11017.44 (5.57)	4096.00 (4.77)	3536.73 (2.23)	9534.40 (3.32)	6883.33 (6.07)	8296.15 (4.13)	13800.00 (2.89)
2. Consumer durable goods.	425.34 (0.56)	650.50 (0.41)	1172.29 (0.48)	659.29 (1.48)	990.13 (0.79)	1582.25 (0.80)	989.29 (1.15)	1200.39 (0.76)	2345.70 (0.82)	1270.00 (1.12)	1325.77 (0.66)	2894.54 (0.61)
Sub Total(B)	4418.20 (5.84)	6400.49 (4.06)	13680.07 (5.57)	5131.72 (11.51)	5497.42 (4.37)	12099.69 (6.37)	5085.29 (5.92)	4737.12 (2.99)	11880.10 (4.14)	8153.33 (7.19)	9621.92 (4.79)	16694.54 (3.50)
C. Non-Farm Assets.												
1. Transport	- -	- -	- -	- -	- -	- -	- -	- -	- -	1250.00 (1.10)	1269.23 (0.63)	- -
2. Others.	- -	- -	777.78 (0.32)	- -	- -	888.89 (0.45)	- -	- -	900.00 (0.31)	- -	- -	909.09 (0.19)
Sub Total(C)	-	-	777.78 (0.32)	-	-	888.89 (0.45)	-	-	900.00 (0.31)	1250.00 (1.10)	1269.23 (0.63)	909.09 (0.19)
Grand Total(A+B+C)	75638.48 (100.00)	157538.92 (100.00)	245654.37 (100.00)	44576.32 (100.00)	125899.09 (100.00)	197720.56 (100.00)	85887.60 (100.00)	158555.55 (100.00)	287289.89 (100 .00)	113474.96 (100.00)	200705.54 (100.00)	477691.35 (100.00)
D. Financial Assets.	634.98 (0.84)	1375.00 (0.87)	3230.00 (1.31)	713.25 (1.60)	1811.87 (1.44)	2463.45 (1.25)	1017.60 (1.18)	3889.70 (2.45)	6045.50 (2.10)	1061.67 (0.94)	3817.41 (1.90)	5353.70 (1.12)
E. Financial Liabilities.	399.21 (0.53)	192.90 (0.12)	720.33 (0.29)	600.11 (1.35)	1032.62 (0.82)	2069.94 (1.05)	1225.00 (1.43)	1705.29 (1.08)	3045.20 (1.06)	3728.17 (3.29)	4226.61 (2.11)	5920.80 (1.24)

values in the recent years, following the introduction of high-yielding varieties.

Farm assets : The value of farm assets per holding increased from Rs 71220.28, 151138.43 and 231197.12 in 1967-68 to Rs 104071.63, 189814.39 and 460087.72 in 1971-72 for small, medium and large holdings respectively. The increase in the value of farm assets mainly came from the rise in land values in the recent years. The value of land witnessed an increase of 44.61, 23.63 and 107.85 per cent in 1971-72 over 1967-68 for small, medium and large holdings respectively. Farm assets accounted for 94.16, 95.94 and 94.11 per cent of farm family assets in 1967-68 and 91.71, 94.58 and 96.31 per cent in 1971-72.

It would be relevant to discuss the value of farm assets (excluding land) for different farm size groups to examine the changing emphasis on certain items over a period of time. The value of farm assets(excluding land) per holding increased from Rs 8754.28, 14253.79 and Rs 34095.88 in 1967-68 to Rs 13738.33, 20583.62 and 50405.91 in 1971-72 for small, medium and large holdings, which gave 56.93, 44.41 and 47.84 per cent increase during the corresponding period(Table 4.6).

The percentage value of irrigation structure to total farm assets(excluding land) increased from 35.74, 15.56 and 7.17 in 1967-68 to 54.47, 38.64 and 33.49 in 1971-72 for small, medium and large holdings respectively. It means that all the three size groups made investment in irrigation structure - one of the necessary concomitants for successfully growing high-yielding varieties. The value of major implements(including farm machinery) increased from Rs 507.14, 3250.56 and 14883.89 in 1967-68 to 834.17, 3638.08 and 18934.83 in 1971-72 for small, medium and large holdings respectively. However, the percentage share of major implements to the total farm

Table 4.6

Per holding value of farm assets (excluding land)

for different farm size groups 1967-68, 1968-69, 1969-70 & 1971-72

Items	1967-68			1968-69			1969-70			1971-72		
	Small	Medium	Large	Small	Medium	Large	Small	Medium	Large	Small	Medium	Large
1. Farm Buildings	2071.43 (23.66)	3303.58 (23.18)	7792.22 (22.85)	850.14 (14.01)	3305.71 (26.27)	7511.56 (26.66)	1260.33 (20.25)	3880.28 (27.83)	5811.30 (24.56)	1628.33 (11.85)	2767.69 (13.45)	6963.63 (13.81)
2. Irrigation structure	3128.57 (35.74)	2217.86 (15.56)	2444.44 (7.17)	2344.72 (38.62)	2242.57 (17.82)	2346.22 (8.33)	2268.89 (36.45)	2331.16 (16.72)	2529.92 (10.69)	7483.33 (54.47)	7953.85 (38.64)	16882.72 (33.49)
3. Implements												
a) Major	507.14 (5.79)	3250.56 (22.80)	14883.89 (43.65)	245.71 (4.05)	2789.50 (22.18)	13033.33 (46.26)	363.56 (5.84)	3899.71 (27.96)	10534.90 (44.54)	834.17 (6.07)	3638.08 (17.67)	18934.83 (37.56)
b) Minor	173.57 (1.98)	216.79 (1.52)	2058.78 (6.04)	160.00 (2.64)	245.86 (1.95)	343.44 (1.23)	189.22 (3.04)	285.64 (2.05)	357.40 (1.51)	135.83 (0.99)	189.38 (0.92)	245.36 (0.49)
4. Draught animals	1271.43 (14.53)	2391.07 (16.77)	2677.78 (7.85)	1024.00 (16.87)	1829.43 (14.54)	1714.11 (6.08)	735.00 (11.81)	1583.09 (11.35)	1474.30 (6.23)	1366.67 (9.95)	2015.38 (9.79)	2559.09 (5.08)
5. Milch animals	1400-00 (15.99)	2180.36 (15.30)	3524.44 (10.34)	1088.00 (17.93)	1690.50 (13.44)	2469.11 (8.76)	1029.44 (16.54)	1372.55 (9.84)	2090.97 (8.84)	1453.33 (10.62)	3184.62 (15.47)	3904.54 (7.75)
6. Other animals	202.14 (2.31)	693.57 (4.87)	714.33 (2.10)	356.71 (5.88)	490.79 (3.80)	756.11 (2.68)	377.89 (6.07)	592.18 (4.25)	859.30 (3.63)	831.67 (6.05)	834.62 (4.06)	915.74 (1.82)
Total	8754.28 (100.00)	14253.79 (100.00)	34095.88 (100.00)	6069.28 (100.00)	12594.36 (100.00)	28173.88 (100.00)	6224.33 (100.00)	13944.61 (100.00)	23658.09 (100.00)	13738.33 (100.00)	20583.62 (100.00)	50405.91 (100.00)

assets decreased from 22.80 and 43.65 in 1967-68 to 17.67 and 37.56 in 1971-72 for medium and large holdings respectively. It was due to the relatively greater increase in the value of irrigation structure.

The value of draught animals decreased from Rs 2391.07 and 2677.78 in 1967-68 to Rs 2015.38 and 2559.09 in 1971-72 for medium and large holdings respectively. The percentage share of draught animals to total farm assets decreased from 16.77 and 7.85 to 9.79 and 5.08 during the corresponding period. It indicated the replacement of bullock labour by farm machinery in the recent years. The value of milch animals increased from Rs 1400.00, 2180.36 and 3524.44 in 1967-68 to 1458.33, 3184.62 and 3904.54 in 1971-72 for small, medium and large sized holdings respectively and confirmed the trend for higher investment in the development of dairying industry.

The value of farm assets per hectare increased from Rs 17560.48, 14760.64 and Rs 11940.62 in 1967-68 to Rs 26845.65, 22196.52 and 23009.61 in 1971-72 for small, medium and large holdings respectively(Table 4.7). The increase in the value of farm assets per hectare in 1971-72 was mainly due to the increase in the value of land assets per hectare. The value of farm assets(excluding land) per hectare increased from Rs 2158.50, 1392.07 and 1760.94 in 1967-68 to Rs 3543.85, 2407.01 and 2520.83 in 1971-72 for small, medium and large holdings respectively(Table 4.8). The value of irrigation structure, major implements and milch animals per hectare witnessed an increase in 1971-72, as compared to 1967-68, for all the three sized holdings. The value of draught animals and farm buildings, however, decreased in case of large sized holdings during the corresponding period.

<u>Household assets</u> : Average value of household assets increased from Rs 4418.20, 6400.49 and 13687.07 in 1967-68 to Rs 8153.33, 9621.92 and

Table 4.7

Per hectare value of farm family assets for different sized holdings, 1967-68, 1968-69, 1969-70, and 1971-72

Items	1967-63			1968-69			1969.70			1971-72		
	Small	Medium	Large	Small	Medium	Large	Small	Medium	Large	Small	Medium	Large
A. Farm Assets												
1.1. Land	15401.98	13368.57	10179.68	8704.44	11375.50	8614.04	18214.43	16815.43	13428.89	23301.80	19789.51	20488.74
2. Farm buildings	510.74	322.64	402.44	221.72	348.81	414.56	307.82	466.48	311.10	420.03	523.65	348.26
3. Irrigation structure	771.40	213.60	126.25	611.52	236.63	129.49	554.14	280.25	135.43	1930.35	930.10	844.33
4. Implements												
a) Major	125.04	317.46	768.71	64.08	294.34	719.32	88.79	468.82	563.97	215.18	425.43	946.96
b) Minor	42.80	21.17	106.33	41.73	25.94	18.96	46.22	34.34	19.13	35.04	22.15	12.27
5. Draught animals	313.49	233.52	138.29	267.06	193.04	94.63	179.51	190.32	78.92	352.54	235.68	127.98
6. Milch animals	345.19	212.94	182.03	283.76	178.38	136.27	251.42	165.01	111.94	376.18	372.40	195.27
7. Other animals	49.84	67.74	36.89	93.03	51.79	41.73	92.29	71.19	46.00	214.53	97.60	45.80
Sub Total (A)	17560.48	14760.64	11940.62	10287.34	12704.43	10169.00	19734.62	18491.84	14695.38	26845.65	22196.52	23009.61
B. Household Assets												
1. Dwelling houses	984.50	561.56	645.99	1166.43	475.60	608.06	1000.38	425.18	510.41	1775.58	970.14	690.16
2. Consumer durable goods	104.88	63.53	60.55	171.95	104.47	87.33	241.62	144.30	125.57	327.60	155.03	144.76
Sub Total (B)	1089.38	625.09	706.54	1338.38	580.07	695.39	1242.00	569.48	635.98	2103.18	1125.17	834.92
C. Non-Farm Assets												
1. Transport	-	-	-	-	-	-	-	-	-	322.44	148.42	-
2. Others	-	-	40.17	-	-	49.06	-	-	48.18	-	-	45.46
Sub Total (C)	-	-	40.17	-	-	49.06	-	-	48.18	322.44	148.42	45.46
G.Total (A+B+C)	18649.86	15385.73	12687.33	11625.72	13284.50	10913.45	20976.62	19061.32	15379.54	29271.27	23470.11	23889.99
D.Financial Assets	156.56	134.29	166.82	186.02	191.18	151.07	248.53	467.61	323.63	273.86	446.40	267.75
E. Financial Liabilities	98.43	17.86	37.20	156.51	108.75	126.94	299.19	205.01	163.02	961.69	494.25	296.11

Table 4.8

Per hectare value of farm assets (excluding land) for different sized holdings, 1967-68, 1968-69, 1969-70 & 1971-72.

Items	1967-68			1968-69			1969-70			1971-72		
	Small	Medium	Large	Small	Medium	Large	Small	Medium	Large	Small	Medium	Large
1. Farm buildings	510.74	322.64	402.44	221.78	348.81	414.56	307.82	466.48	311.10	420.03	323.65	348.26
2. Irrigation structure	771.40	210.60	126.25	611.52	236.63	129.49	554.14	280.25	135.43	1930.35	930.10	844.33
3. Implements												
a)Major	125.04	317.46	768.71	64.08	294.34	719.32	38.79	468.82	563.97	215.18	425.43	946.96
b)Minor	42.80	21.17	106.33	41.73	25.94	18.96	46.22	34.34	19.13	35.04	22.15	12.27
4. Draught animals	313.49	233.52	138.29	267.06	193.04	94.63	179.51	190.32	78.92	352.54	235.68	127.98
5. Milch animals	345.19	212.94	132.03	283.76	178.38	136.27	251.42	165.01	111.94	376.18	372.40	195.27
6. Other animals	49.84	67.74	36.89	93.03	51.79	41.73	92.29	71.19	46.00	214.53	97.60	45.80
Total	2158.50	1392.07	1760.94	1582.90	1328.93	1554.96	1520.19	1676.41	1266.49	3543.85	2407.01	2520.87

16694.54 in 1971-72 for small, medium and large holdings respectively. The percentage share of household assets to total farm family assets increased from 5.84 and 4.06 to 7.19 and 4.79 for small and medium sized holdings respectively during the corresponding period. The decrease in percentage share of household assets in 1971-72, as compared to 1967-68, in case of large holdings, was due to the relatively higher increase of land assets in the total assets. The percentage growth in household assets came to 84.54, 50.33 and 22.04 from 1967-68 to 1971-72 for small, medium and large sized holdings respectively. The percentage share of consumer durable goods to total assets increased from 0.56, 0.41 and 0.48 in 1967-68 to 1.12, 0.66 and 0.61 in 1971-72 for the different sized holdings and indicated that the farm families spent so much on these goods to enhance their social status during this period.

Non-farm assets : The value of non-farm assets increased from nil in 1967-68 to Rs 1250.00 and 1269.23 in 1971-72 for small and medium sized holdings respectively. It accounted for 1.10 and 0.63 per cent of total assets in 1971-72 and indicated that small and medium holdings invested in transport business in 1971-72 to supplement their farm incomes. The value of non-farm assets increased from Rs 777.78 in 1967-68 to Rs 909.09 in 1971-72 for large holdings, and formed 0.32 and 0.19 per cent of the total assets during the corresponding period.

Financial assets : The value of financial assets per holding increased from Rs 634.98, 1375.00 and 3230.00 in 1967-68 to 1061.67, 3817.41 and 5353.70 in 1971-72 for small, medium and large holdings respectively. Percentage increase in the amount of financial assets came out to be 67.20, 177.63 and 65.75 for the different sized holdings during the corresponding period. The financial assets per hectare also increased for all the three farm size groups during this period, thereby indicating that the Punjab agriculture was becoming more capital intensive.

Financial liabilities : Average amount of financial liabilities increased from Rs 399.21, 182.90 and 720.33 in 1967-68 to Rs 3728.17, 4226.61 and 5920.80 in 1971-72 for small, medium and large holdings respectively. It accounted for 0.53, 0.12 and 0.29 per cent of total assets in 1967-68, which increased to 3.29, 2.11 and 1.24 per cent in 1971-72. The amount of financial liabilities per hectare increased from Rs 98.43, 17.86 and 37.20 in 1967-68 to Rs 961.69, 494.25 and 296.11 in 1971-72 for small, medium and large holdings respectively. The higher magritude of financial liabilities in 1971-72 for all the three groups might be due to the higher investment in farm machinery and irrigation structure.

Values of assets in labour households : The per household value of assets for the labour households is presented in Table 4.9. It was hypothesized that the introduction of high-yielding varieties would also benefit the agricultural labourers, who would respond in building up the household assets. The study showed that the labour households were able to pile up assets of the value of Rs 1817.27 by the end of 1971-72. The highest value of assets(Rs 2047.21) per household was noticed in village Gill, followed by Faqarsar(Rs 1784.17) and Bhinder Kalan(Rs 1620.41).

The value of household assets amounted to Rs 1422.87, which constituted 78.29 per cent of the total assets for the three villages taken together. It contributed 76.51, 79.57 and 79.19 per cent of the total assets for Gill, Bhinder Kalan and Faqarsar respectively.

The value of dwelling houses came to Rs 1211.45, and accounted for 66.66 per cent of the total assets. About 48.22 per cent of assets in the form of dwelling houses were built up from 1967-68 onwards. The value of dwelling houses worked out to be Rs 1336.67, 1030.00 and 1217.67 for Gill, Bhinder Kalan and Faqarsar respectively. It contributed 65.29, 66.65

Table 4.9

Value of assets per household for labour household, 1971-72

Items	Gill	Bhinder Kalan	Fagarsar	Overall average
A. Working Assets	4.20 (0.20)	6.42 (0.40)	36.53 (2.05)	15.72 (0.87)
B. Household Assets				
1. Dwelling houses	1336.67 (65.29)	1080.00 (66.65)	1217.67 (68.25)	1211.45 (66.66)
2. Consumer durable goods	229.67 (11.22)	209.33 (12.92)	195.27 (10.94)	211.42 (11.63)
Sub Total(B)	1566.34 (76.51)	1289.33 (79.57)	1412.94 (79.19)	1422.87 (78.29)
C. Live stock Assets				
1. Milch animals	256.67 (12.54)	283.33 (17.48)	211.67 (11.86)	250.56 (13.79)
2. Other animals	220.00 (10.75)	41.33 (2.55)	123.03 (6.90)	128.12 (7.05)
Sub Total(C)	476.67 (23.29)	324.66 (20.03)	334.70 (18.76)	378.68 (20.84)
Grand Total (A+B+C)	2047.21 (100.00)	1620.41 (100.00)	1784.17 (100.00)	1817.27 (100.00)
D. Financial Assets	135.33 (6.61)	293.33 (18.10)	154.67 (8.67)	194.44 (10.70)
E. Financial Liabilities	340.36 (16.65)	290.93 (17.95)	598.33 (33.54)	410.04 (22.56)

Note: The figures in parentheses denote percentages to total.

and 68.25 per cent of the total assets. The percentage of assets, in the form of dwelling houses, added from 1967-68 onwards, to total value of dwelling houses came to 36.71, 80.31 and 32.41 for Gill, Bhinder Kalan and Faqarsar respectively.

The value of consumer durable goods worked out to be Rs 211.42, which formed 11.63 per cent of the total assets by the end of 1971-72. The proportion of consumer durable goods formed from 1967-68 onwards, to total value of this component by the end of 1971-72, came to 49.83. The value of consumer durable goods amounted to Rs 229.67, 209.33 and 195.27 for Gill, Bhinder Kalan and Faqarsar respectively which formed 11.22, 12.92 and 10.94 per cent of the total assets. The percentage value of consumer durable goods added after 1967-68 to total value was 27.55, 69.59 and 54.86 for the three villages respectively.

The value of livestock assets was estimated at Rs 378.68, which accounted for 20.84 per cent of the total assets at the end of 1971-72. It amounted to Rs 476.67, 324.66 and 334.70, and contributed 23.29, 20.03 and 18.76 per cent of the total assets for Gill, Bhinder Kalan and Faqarsar respectively.

The value of milch animals accounted for 13.79 per cent of the total assets for the three villages together. The percentage value of assets in the form of milch animals accumulated after 1967-68 to total value was 88.31. The value of milch animals was estimated at Rs 256.67, 283.33 and 211.67, contributing 12.54, 17.48 and 11.86 per cent of the total assets for Gill, Bhinder Kalan and Faqarsar respectively. The percentage value of milch animals added from 1967-68 onwards accounted for 80.78, 88.24 and 92.82 per cent of the total value of milch animals for the three villages respectively.

The value of other animals worked out to be Rs 128.12, which formed 7.05 per cent of the total assets. The value of assets in the form of other animals added after 1967-68 accounted for 40.76 per cent of the total value of this component. Its value amounted to Rs 220.00, 41.33 and 123.03, contributing 10.75, 2.55 and 6.90 per cent of the total assets for Gill, Bhinder Kalan and Faqarsar respectively. The percentage value of this component added after 1967-68, contributed 21.21, 56.45 and 70.45 of the total value for the three villages respectively. It indicated that the labour households accumulated major proportion of the assets after the commencement of the high-yielding varieties.

The magnitude of financial assets was Rs 194.44, which accounted for 10.70 per cent of the total assets. The value of financial assets was the highest(Rs 293.33) in Bhinder Kalan and the lowest(Rs 135.33) in Gill. The percentage value of financial assets constituted 6.61, 18.10 and 8.67 per cent of the total assets for Gill, Bhinder Kalan and Faqarsar respectively.

The financial liabilities amounted to Rs 410.04 which accounted for 22.56 per cent of the total assets. It constituted 16.65, 17.95 and 33.54 per cent of the total assets for Gill, Bhinder Kalan and Faqarsar respectively.

CHAPTER V

SHIFTS IN THE USE OF INPUTS

Increased incomes of the farming community, as a result of technological transformation of agriculture in the recent years, are mostly due to the profitable application of increased and improved inputs in farming. The adoption and cultivation of high-yielding varieties and increased use of chemical fertilizers along with the increased irrigation potentialities have gone a long way in supplementing the farmers' incomes. This section is an attempt to review over time the changes in the magnitude and relative importance of various items entering cost A_2(hitherto denoted as production expenditure).

Production expenditure included the costs incurred on seeds, manures, fertilizers, insecticides and pesticides, hired human labour, bullock labour(owned & hired) running expenditure and depreciation on irrigation structures, farm machinery, implements and farm buildings, taxes, cesses, water rates and interest on working capital.

Gross income and production expenditure

Average production expenditure along with its proportion to gross income for various years is presented in Table 5.1. It was hypothesized that average production expenditure would increase, following the introduction of high-yielding varieties.

Table 5.1
Gross income & production expenditure,
1967-68,1968-69, 1969-70 and 1971-72

Year	Average gross income(Rs)	Average production expenditure(Rs)	Proportion of production expenditure to gross income
1967-68	22044.19	11586.90	52.56
1968-69	20938.60	11828.41	56.49
1969-70	26556.41	14176.78	53.38
1971-72	35105.60	18095.18	51.54

Average production expenditure was estimated at Rs 18095.18 in 1971-72, which accounted for 51.54 per cent of average gross income. Average production expenditure increased from Rs 11586.90 in 1967-68 to Rs 11828.41 and 14176.78 in 1968-69 and 1969-70 respectively, which gave a rising trend of production expenditure. The proportion of production expenditure to gross income came to 52.56, 56.49 and 53.38 per cent during the corresponding period. The percentage increase in production expenditure over 1967-68 was 2.08, 22.35 and 56.17 during the subsequent years. The increased amount of production expenditure every year highlighted the importance of the application of increased and improved inputs in augmenting farm incomes.

The magnitude and relative importance of various components of production expenditure for different years is presented in Table 5.2. It was hypothesized that the expenses incurred on fertilizers, irrigation charges, human labour and farm machinery(running expenses) would increase as a result of the introduction of high-yielding varieties. In fact, the per holding expenditure on fertilizers increased from Rs 1194.83 in 1967-68 to Rs 1538.72, 2032.98 and 3608.48 in 1968-69, 1969-70 and 1971-72 respectively. The proportion of fertilizer expenses to average production expenditure increased from 10.31 in 1967-68 to 13.00, 14.34 and 19.94 during the corresponding period. The expenditure on irrigation charges and depreciation witnessed an increase from Rs 629.28 in 1967-68 to Rs 965.82, 1048.47 and 1240.55 in 1968-69, 1969-70 and 1971-72 respectively. The expenses incurred on hired human labour increased from Rs 3037.77 in 1967-68 to Rs 2963.86, 3740.84 and 4495.20 during the subsequent years. This component held the first place in the average production expenditure in 1968-69, 1969-70 and 1971-72, occupying 25.04, 26.39 and 24.84 per cent of production expenditure during the corresponding period. The value

Table 5.2

Production Expenses Per holding for 1967-68, 1968-69, 1969-70 & 1971-72

Items of Expenses	1967-68	1968-69	1969-70	1971-72
Seed	1043.50 (9.01)	1040.36 (8.80)	719.38 (5.07)	878.85 (4.86)
Manures	147.10 (1.27)	218.12 (1.84)	404.22 (2.85)	505.54 (2.79)
Fertilizers	1194.83 (10.31)	1538.72 (13.00)	2032.98 (14.34)	3608.48 (19.94)
Insecticidds and pesticides	70.33 (0.61)	82.17 (0.69)	183.47 (1.29)	517.50 (2.86)
Depreciation on farm buildings & [illegible] implements	459.36 (3.96)	55.28 (0.47)	331.10 (2.34)	358.73 (1.98)
Interest on working capital	41.29 (0.36)	107.04 (0.90)	278.17 (1.96)	659.90 (3.65)
Land Revenue	43.03 (0.37)	56.34 (0.48)	56.98 (0.40)	44.80 (0.25)
Land Rent	888.65 (7.67)	737.09 (6.22)	806.46 (5.69)	791.25 (4.37)
Irrigation charges & depreciation of irrigation equipment.	629.28 (5.43)	965.82 (8.16)	1048.47 (7.39)	1240.55 (6.86)
Hired Human Labour (a) Casual	1228.81 (10.61)	1044.92 (8.83)	1690.04 (11.92)	2824.57 (15.61)
(b) Permanent	1844.96 (15.92)	1918.94 (16.21)	2050.80 (14.47)	1670.63 (9.23)
Depreciation on Machinery & running expenses.	374.72 (3.23)	1591.42 (13.51)	1833.51 (12.93)	2249.23 (12.43)
Bullock Labour	3250.12 (28.05)	2336.24 (19.74)	2518.96 (17.78)	2305.30 (12.74)
Miscellaneous Expenses.	370.92 (3.20)	135.95 (1.15)	222.24 (1.57)	439.85 (2.43)
	11586.90 (100.00)	11828.41 (100.00)	14176.78 (100.00)	18095.18 (100.00)

of insecticides and pesticides increased from Rs 70.33 in 1967-68 to Rs 82.17, 183.47 and 517.50 during the following years. The percentage of this component to production expenditure increased from 0.61 in 1967-68 to 0.69, 1.29 and 2.86 in 1968-69, 1969-70 and 1971-72 respectively.

The magnitude of bullock labour accounted for 28.05 per cent of production expenditure in 1967-68 but it declined to 19.74, 17.78 and 12.74 per cent during the subsequent years. The rapidly decline in the relative importance of bullock labour indicated the replacement of bullock labour by farm machinery. The running expenses of farm machinery increased from Rs 374.72 in 1967-68 to Rs 1591.42, 1833.51 and 2249.23 in 1968-69, 1969-70 and 1971-72 respectively. All this indicated the increased importance of the package of inputs and particularly the machinery input gaining in importance, owing to the adoption of high-yielding varieties.

The magnitude of various components of production expenditure on per hectare basis increased from Rs 1004.64 in 1967-68 to Rs 1100.01, 1349.53 and 1531.84 in 1968-69, 1969-70 and 1971-72 respectively(Table 5.3). The percentage increase in production expenditure per hectare over 1967-68 came to 9.49, 34.33 and 52.47 during the corresponding period.

Three-fold increase was witnessed in the per hectare expenses on fertilizers from 1967-68 to 1971-72. The expenditure on fertilizers increased from Rs 103.60 in 1967-68 to Rs 143.10, 193.52 and 305.48 in the subsequent years. The expenses on irrigation charges and depreciation per hectare increased from Rs 54.56 in 1967-68 to Rs 105.02 in 1971-72. The expenses on hired human labour increased from Rs 266.51 in 1967-68 to Rs 275.63, 356.10 and 380.54 in 1968-69, 1969-70 and 1971-72 respectively. The value of insecticides and pesticides per hectare

Table 5.3

Production Expenses per hectare for 1967-68, 1968-69, 1969-70 & 1971-72

Items of Expenses	1967-68	1968-69	1969-70	1971-72
Seed	90.48	96.75	68.48	74.40
Manures	12.75	20.29	38.48	42.80
Fertilizers	103.60	143.10	193.52	305.48
Insecticides & pesticides	6.10	7.64	17.46	43.81
Depreciation on farm buildings & implements.	39.83	5.14	31.52	30.37
Interest on working capital	3.58	9.95	26.48	55.86
Land Revenue	3.73	5.24	5.42	3.79
Land Rent	77.05	68.55	76.77	66.98
Irrigation charges & depreciation of irrigation equipment.	54.53	89.82	99.81	105.02
Hired human Labour (a) Casual	106.54	97.17	160.88	239.11
(b) Permanent	159.97	178.46	195.22	141.43
Depreciation on machinery & running expenses.	32.49	148.00	174.54	190.41
Bullock Labour	281.80	217.26	239.79	195.15
Miscellaneous Expenses.	32.16	12.64	21.16	37.23
Total:-	1004.64	1100.01	1349.53	1531.84

increased from Rs 6.10 in 1967-68 to Rs 7.64, 17.46 and 43.81 in the following years. The magnitude of bullock labour, however, decreased from Rs 281.80 in 1967-68 to Rs 195.15 in 1971-72. This indicated the replacement of bullock labour by farm machinery. The running expenses of farm machinery and its depreciation increased from Rs 32.49 in 1967-68 to Rs 190.41 in 1971-72. Thus the importance of various components of production expenditure on per hectare basis confirmed the similar trend in the case of per holding production expenditure.

Borrowings : The credit input per holding and per hectare for various years is given in Table 5.4. It was hypothesized that the use of this input would increase, following the introduction of high-yielding varieties. The borrowings per holding increased from Rs 1136.90 in 1967-68 to 4424.34 in 1971-72, accounting for 289.16 per cent increase during the corresponding period. The increased borrowings resulted mostly from the higher capital/ credit requirements of the high-yielding varieties.

A comparison of the relative importance of various sources of borrowings showed that the co-operatives held the first position from 1967-68 through 1969-70 and contributed 51.62, 49.58 and 70.82 per cent of the total farm loans during the corresponding period. The major proportion of the loan from this source was disbursed in the shape of fertilizers and short-term cash loans for payment of wages to labour etc. The land mortgage banks, which financed the purchase of electric motors, oil engines and tractors, also occupied an important place in the total borrowings for all the years under study. The Government taccavi loan, however, witnessed a decline during this period. Its contribution to the total borrowings decreased from 33.72 per cent in 1967-68 to 0.23 per cent in 1971-72. Another healthy development was also in sight. The commercial banks, which recently entered in the field of agricultural finance, have

Table 5.4

Borrowings per holding and per hectare, 1967-68, 1968-69, 1969-70 and 1971-72

Source of borrowings	Borrowings per holding (₹)				Borrowings per hectare			
	1967-68	1968-69	1969-70	1971-72	1967-68	1968-69	1969-70	1971-72
Cooperative Society	586.90 (51.62)	589.43 (49.58)	690.83 (70.82)	1491.67 (33.72)	50.89	54.82	65.76	126.28
Land Mortgage Banks	166.67 (14.66)	142.33 (11.97)	118.00 (12.10)	916.00 (20.70)	14.45	13.24	11.23	77.54
Govt.	383.33 (33.72)	223.73 (18.82)	166.67 (17.08)	10.00 (0.23)	33.24	20.81	15.87	0.85
Commercial Banks	-	-	-	133.33 (3.01)	-	-	-	11.29
Traders/Artiah	-	166.67 (14.02)	-	1640.00 (37.07)	-	15.50	-	138.83
Relatives/Friends.	-	66.67 (5.61)	-	206.67 (4.67)	-	6.20	-	17.50
Any other.	-	-	-	26.67 (0.60)	-	-	-	2.26
Total:-	1136.90 (100.00)	1188.83 (100.00)	975.50 (100.00)	4424.34 (100.00)	98.58	110.57	92.86	374.55

also started making their contribution. The borrowings from commercial banks amounted to Rs 133.33, which formed 3.01 per cent of the total borrowings in 1971-72. As a result, the share of the co-operatives declined from 51.62 per cent in 1967-68 to 33.72 per cent in 1971-72.

The study showed that the non-institutional sources of borrowings still occupied an important place in the total borrowings. The borrowings from traders/artiahs increased from Rs 166.67 in 1968-69 to Rs 1640.00 in 1971-72. Its contribution to the total borrowings increased from 14.02 to 37.07 per cent during the corresponding period. This was due to the easy accessibility and quick receipt of money from this source as compared to the procedural complications of borrowings from the institutional sources. The borrowings per hectare increased from Rs 98.58 in 1967-68 to Rs 374.55 in 1971-72. It increased from Rs 50.89 to Rs 126.08 in case of the co-operatives during the corresponding period. Borrowings per hectare from Land mortgage banks increased from Rs 14.45 in 1967-68 to Rs 77.54 in 1971-72. The per hectare borrowings from non-institutional sources increased from Rs 21.70 in 1968-69 to Rs 158.59 in 1971-72. However, the Government taccavi loan witnessed a decrease from Rs 33.24 to Rs 0.85 during this period.

Production expenditure for different sized holdings

Production expenditure per holding and per hectare for small, medium and large holdings is presented in Tables 5.5 & 5.6. Average production expenditure increased with the increase in farm size and this was true for almost every component of production expenditure for all the years under study. It amounted to Rs 6006.87 for small holdings and Rs 10347.27 and Rs 17855.24 for medium and large holdings in 1967-68. Average production expenditure was estimated at Rs 5580.92, 11478.92 and 32740.37 for small, medium and large sized holdings respectively in 1971-72.

Table 5.5

Production Expenses Per holding for different Sized holdings, 1967-68, 1968-69, 1969-70 & 1971-72

Items of Expenses.	1967-68			1968-69		
	Small	Medium	Large	Small	Medium	Large
Seed.	376.70 (6.27)	771.24 (7.45)	1985.65 (11.12)	359.42 (8.55)	1082.76 (9.26)	1504.00 (8.37)
Manures.	128.00 (2.13)	162.14 (1.57)	138.56 (0.78)	127.14 (3.03)	189.29 (1.62)	333.73 (1.86)
Fertilizers	484.57 (8.07)	984.52 (9.52)	2074.41 (11.62)	402.45 (9.58)	1367.66 (11.70)	2688.57 (14.96)
Insecticides & pesticides	41.37 (0.69)	59.08 (0.57)	110.36 (0.62)	21.96 (0.52)	69.62 (0.59)	148.52 (0.83)
Depreciation on farm buildings and implements.	192.07 (3.20)	195.88 (1.89)	1076.72 (6.03)	16.57 (0.39)	41.07 (0.35)	107.39 (0.60)
Interest on working capital	39.30 (0.65)	41.79 (0.40)	41.06 (0.23)	43.81 (1.04)	98.00 (0.84)	169.63 (0. 94)
Land Revenue	20.05 (0.33)	41.07 (0.40)	65.48 (0.37)	23.07 (0.55)	50.97 (0.43)	90.58 (0.50)
Land Rent	273.88 (4.56)	607.79 (5.87)	1803.68 (10.10)	180.85 (4.30)	1187.34 (10.15)	470.00 (2.62)
Irrigation charges & depreciation of irrigation equipment.	447.98 (7.46)	483.11 (4.67)	997.67 (5.59)	619.78 (14.75)	892.32 (7.63)	1349.29 (7.50)
Hired human Labour. (a) Casual.	542.01 (9.02)	988.66 (9.56)	2136.42 (11.96)	288.74 (6.87)	1212.21 (10.37)	1372.93 (7.64)
(b) Permanent.	662.96 (11.04)	1831.80 (17.70)	2784.70 (15.60)	198.71 (4.73)	1551.39 (13.27)	3828.66 (21.31)
Depreciation of machinery & running expenses.	135.19 (2.25)	246.14 (2.38)	748.36 (4.19)	281.88 (6.71)	1056.56 (9.04)	3441.95 (19.15)
Bullock Labour	2534.22 (42.19)	3716.79 (35.92)	3080.99 (17.25)	1546.01 (36.79)	2760.87 (23.61)	2290.32 (12.75)
Miscellaneous expenses.	128.57 (2.14)	217.26 (2.10)	811.11 (4.54)	92.00 (2.19)	133.04 (1.14)	174.67 (0.97)
Total;-	6006. 87 (100. 00)	10347.27 (100.00)	17855.24 (100.00)	4202.39 (100.00)	11693.10 (100.00)	17970.24 (100.00)

Table 5.5 (contd)

Production Expenses Per Holding for different sized holdings, 1967-68, 1968-69, 1969-70 and 1971-72

Items of Expenses	1969-70			1971-72		
	Small	Medium	Large	Small	Medium	Large
Seed	339.96 (6.73)	653.57 (5.14)	1133.24 (4.72)	234.16 (4.20)	607.47 (5.29)	1551.24 (4.74)
Manures	160.78 (3.19)	324.73 (2.56)	710.77 (2.96)	248.17 (4.45)	451.00 (3.93)	710.37 (2.17)
Fertilizers	491.51 (9.75)	1674.00 (13.18)	3815.19 (15.88)	744.24 (13.33)	1846.16 (16.08)	7253.52 (22.15)
Insecticides & pesticides	[illegible] (1.63)	170.77 (1.42)	278.45 (1.16)	117.58 (2.11)	402.27 (3.50)	871.82 (2.66)
Depreciation on farm buildings and implements	212.92 (4.22)	377.45 (2.97)	386.50 (1.61)	164.33 (2.94)	292.42 (2.55)	543.11 (1.66)
Interest on working capital	84.66 (1.68)	236.97 (1.87)	497.45 (2.07)	167.67 (3.00)	411.74 (3.59)	1221.66 (3.73)
Land Revenue	24.76 (0.49)	58.61 (0.46)	84.19 (0.35)	11.38 (0.20)	35.90 (0.31)	73.56 (0.22)
Land Rent	264.26 (5.24)	747.05 (5.88)	1359.77 (5.66)	242.66 (4.35)	568.84 (4.96)	1353.35 (4.14)
Irrigation charges & Dep. of irrigation equip	571.51 (11.33)	893.93 (7.03)	1647.75 (6.86)	579.76 (10.39)	937.85 (8.17)	1958.71 (5.98
Hired human Labour: (a) Casual	379.31 (7.53)	1601.23 (12.60)	2958.40 (12.32)	664.29 (11.91)	1782.29 (15.53)	5234.69 (15.99)
(b) Permanent	616.40 (12.34)	1869.08 (14.71)	3542.63 (14.75)	594.66 (10.65)	909.92 (7.93)	3156.55 (9.64)
Dep. of machinery & running expenses	200.95 (3.98)	1375.61 (10.83)	3806.51 (15.85)	224.34 (4.02)	845.85 (7.37)	5012.26 (15.31)
Bullock Labour	1476.68 (29.28)	2465.65 (19.40)	3536.94 (14.72)	1482.34 (26.56)	2053.65 (17.89)	3051.60 (9.32)
Miscellaneous expenses	132.17 (2.61)	247.70 (1.95)	262.22 (1.09)	105.34 (1.89)	333.56 (2.91)	747.93 (2.29)
Total:-	5038.31 (100.00)	12705.35 (100.00)	24020.01 (100.00)	5580.92 (100.00)	11478.92 (100.00)	32740.37 (100.00)

Table 5.6 (contd.)

Production Expenses Per Holding For Different Size of Holdings, 1967-68, 1968-69, 1969-70 and 1970-71.

Size of Holdings	1967-68			1968-69			1969-70			1970-71		
	Large	Small	Medium	Large	Small	Medium	Large	Small	Medium	Large	Small	Medium
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	(4.74)	(4.72)	(4.20)	(5.75)	(5.29)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	(2.17)	(2.06)	(4.15)	(3.50)	(3.38)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	(22.15)	(8.00)	(18.38)	(10.05)	(10.03)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	(2.66)	(1.10)	(2.11)	(1.85)	(3.50)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	(1.85)	(1.85)	(4.55)	(4.55)	(2.55)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	(3.73)	(2.07)	(3.07)	(1.75)	(3.59)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	(0.22)	(0.75)	(0.20)	(0.00)	(0.31)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	(1.14)	(5.00)	(1.35)	(5.24)	(4.90)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	(10.75)	(10.75)	(11.59)	(8.17)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	(15.94)	(2.32)	(11.01)	(7.23)	(15.53)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	(9.04)	(4.75)	(10.75)	(12.34)	(7.85)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	(15.91)	(5.56)	(4.60)	(5.59)	(7.57)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	(0.62)	(4.75)	(2.35)	(17.09)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	(2.50)	(1.06)	(1.00)	(2.91)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	(100.00)	(100.00)	(100.00)	(100.00)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Table:- 5.6

Production Expenditure Per Hectare for different sized holdings, 1967-68, 1968-69, 1969-70 & 1971-72

Items of Expenses.	1967-68			1968-69			1969-70			1971-72		
	Small	Medium	Large	Small	Medium	Large	Small	Medium	Large	Small	Medium	Large
Seed	92.88	75.32	102.55	93.74	114.25	83.01	83.03	78.57	60.67	60.40	71.04	77.58
Manures	31.56	15.84	7.16	33.16	19.97	18.42	39.27	39.04	38.05	64.02	52.74	35.53
Fertilizers	119.48	96.15	107.14	104.96	144.31	148.38	120.04	201.25	204.24	191.98	215.89	362.76
Insecticides & Pesticides	10.20	5.77	5.70	5.73	7.35	8.19	20.14	21.61	14.91	30.33	47.04	43.60
Depreciation on farm buildings &Implements	47.36	19.13	55.61	4.32	4.33	5.95	52.00	45.38	20.69	42.39	34.19	27.16
Interest on working capital	9.69	4.08	2.12	11.43	10.34	9.36	20.68	28.49	26.63	43.25	43.15	61.10
Land Revenue	4.94	4.01	3.38	6.02	5.38	5.00	6.05	7.05	4.51	2.94	4.20	3.68
Land Rent	67.53	59.36	93.15	47.17	125.28	25.94	64.54	89.81	72.80	62.59	66.52	67.68
Irrigation charges & dep. of irrigation equipment	110.46	47.18	51.53	161.64	94.16	74.47	139.59	107.47	88.20	149.55	109.67	97.96
Hired human labour (a) Casual	133.64	96.56	110.34	75.31	127.91	75.77	92.64	192.50	158.37	171.35	208.42	261.79
(b) Permanent	163.46	178.90	143.83	51.82	163.70	211.31	150.55	224.70	189.65	153.40	106.40	157.87
Depreciation on machinery & running expenses	33.34	24.04	38.65	73.51	111.48	189.97	49.08	165.36	203.77	57.87	98.91	250.67
Bullock Labour	624.85	362.99	159.12	403.21	291.32	126.41	360.66	294.41	189.34	382.38	240.15	152.61
Miscellaneous expenses	31.70	21.22	41.89	23.99	14.04	9.64	32.28	29.78	14.04	27.17	39.01	37.40
Total	1481.09	1010.55	922.17	1096.01	1233.82	991.82	1230.55	1527.42	1285.87	1439.62	1342.33	1637.39

It was hypothesized that the large holdings would incur higher expenditure on per hectare basis owing to their relatively better financial position than that of the small holdings. Production expenditure per hectare stood at Rs 1439.62 in 1971-72 for small holdings as against Rs 1481.09 in 1967-68. The marginal decrease in production expenditure per hectare in 1971-72 came mostly from reduction in the use of bullock labour. The expenses on bullock labour declined from Rs 624.85 in 1967-68 to Rs 382.38 in 1971-72. Production expenditure per hectare increased from Rs 1010.55 in 1967-68 to Rs 1342.33 in 1971-72 for medium holdings. This was mainly due to the increase in expenditure on fertilizers and irrigation charges. The percentage increase in production expenditure was 32.83 during this period. Per hectare production expenditure consistently increased from Rs 922.17 in 1967-68 to Rs 991.82, 1285.87 and 1637.39 in 1968-69, 1969-70 and 1971-72 respectively for large holdings. The percentage increase over 1967-68 came to 7.54, 39.44 and 77.55 during the corresponding period. The rapid increase in production expenditure for large holdings might be due to the increase in the intensity of cropping and increased use of improved inputs, following the adoption of high-yielding varieties.

An examination of the magnitude of various components of production expenditure per hectare showed that the expenses on fertilizers increased from Rs 119.48 in 1967-68 to Rs 191.98 in 1971-72 for small holdings. It increased from Rs 96.15 and Rs 107.14 to Rs 215.89 and 362.76 for medium and large holdings respectively during the corresponding period. The expenditure on irrigation charges and depreciation increased from Rs 110.46, 47.18 and 51.53 in 1967-68 to Rs 140.55, 109.67 and 97.96 in 1971-72 for small, medium and large holdings respectively. The expenses on hired human labour increased from Rs 297.10 in 1967-68 to

Rs 324.75 in 1971-72 for small holdings. It increased from Rs 275.46 and 254.17 to Rs 314.82 and 419.66 for medium and large holdings during the corresponding period. The expenditure on insecticides & pesticides also witnessed an increase during this period for all the three farm size groups. The running expenditure and depreciation of farm machinery also increased from Rs 33.34, 24.04 and 38.65 in 1967-68 to Rs 57.87, 98.91 and 250.67 in 1971-72, for small, medium and large holdings respectively. The magnitude of bullock labour, however, decreased from Rs 624.85, 362.99 and 159.12 to Rs 382.38, 240.15 and 152.61 for small, medium and large holdings respectively during this period.

Credit situation

The credit input per holding and per hectare is given in Tables 5.7 & 5.8. It was hypothesized that the use of this input for different sized holdings would increase owing to the adoption of high-yielding varieties. Borrowings per holding increased from Rs 882.72 and Rs 1622.22 in 1967-68 to Rs 2610.78 and Rs 8463.65 in 1971-72, accounting for 195.77 and 421.70 per cent increase for medium and large sized holdings respectively during the corresponding period. The decrease in the amount of borrowings in 1971-72, as compared to 1967-68, for small holdings was due to the lesser amount of borrowings from Co-operative Societies in 1971-72.

As regards the relative importance of various sources of borrowings, co-operatives occupied the first place from 1967-68 through 1969-70 and contributed 79.02, 58.77 and 100.00 per cent of total borrowings for small holdings. It also enjoyed the first position during thisperiod and advanced 52.05, 63.96 and 100.00 per cent of the total borrowings in case of large holdings. Borrowings from land mortgage

Table 5.7

Borrowing per holding for different sized holdings, 1967-68, 1968-69, 1969-70 and 1971-72

Source of Borrowing	1967-68			1968-69			1969-70			1971-72		
	Small	Medium	Large	Small	Medium	Large	Small	Medium	Large	Small	Medium	Large
Cooperative Society	807.00 (79.02)	311.29 (35.26)	844.44 (52.05)	552.14 (58.77)	353.07 (32.49)	986.11 (63.96)	577.78 (100.00)	502.27 (39.28)	1000.00 (100.00)	416.67 (43.86)	658.46 (25.22)	3063.64 (36.20)
Land Mortgage Banks	- -	357.14 (40.46)	- -	- -	305.00 (28.07)	- -	- -	321.82 (25.17)	- -	- -	1544.62 (59.16)	672.73 (7.95)
Govt.	214.29 (20.98)	214.29 (24.28)	777.78 (47.95)	101.71 (10.82)	428.57 (39.44)	- -	- -	454.54 (35.55)	- -	- -	23.08 (0.88)	- -
Commercial Banks	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	363.64 (4.29)
Trader/Artiah	- -	- -	- -	- -	- -	555.56 (36.04)	- -	- -	- -	533.33 (56.14	230.77 (8.84)	3909.09 (46.19)
Relatives/Friends	- -	- -	- -	285.71 (30.41)	- -	- -	- -	- -	- -	- -	92.31 (3.54)	454.55 (5.37)
Any other	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	61.54 (2.36)	- -
Total	1021.29 (100.00)	882.72 (100.00)	1622.22 (100.00)	939.56 (100.00)	1086.64 (100.00)	1541.67 (100.00)	577.78 (100.00)	1278.63 (100.00)	1000.00 (100.00)	950.00 (100.00)	2610.78 (100.00)	8463.35 (100.00)

Table 5.8

Borrowings per hectare for different sized holdings, 1967-68, 1968-69, 1969-70 & 1971-72

Source of borrowing	1967-68			1968-69			1969-70			1971-72		
	Small	Medium	Large	Small	Medium	Large	Small	Medium	Large	Small	Medium	Large
Cooperative society	198.98	30.40	43.61	144.00	37.26	54.42	141.11	60.38	53.53	107.48	76.91	153.22
Land Mortgage Banks	-	34.88	-	-	32.18	-	-	38.69	-	-	180.62	33.64
Govt.	52.83	20.93	42.93	26.53	45.22	-	-	54.64	-	-	2.70	-
Commercial Banks	-	-	-	-	-	-	-	-	-	-	-	18.19
Trader/Artiah	-	-	-	-	-	30.66	-	-	-	137.57	26.99	195.50
Relatives/Friends	-	-	-	74.52	-	-	-	-	-	-	10.79	22.73
Any Other	-	-	-	-	-	-	-	-	-	-	7.20	-
Total	251.81	86.21	86.54	245.05	114.66	85.08	141.11	153.71	53.53	245.05	305.21	423.28

bank occupied the first place in 1967-68 and 1971-72 for medium holdings, which formed 40.96 and 59.16 per cent of total borrowings during this period. The credit per holding from commercial banks amounted to Rs.363.64 in case of large holdings and contributed 4.29 per cent of the total borrowings in 1971-72. This indicated that although the commercial banks have entered into the field of agricultural finance, yet their activities were confined to financing mostly the large holdings. Non-institutional sources of borrowings also occupied an important place for small and large holdings during this period.

The borrowings per hectare increased from Rs 86.21 and Rs 86.54 in 1967-68 to Rs 305.21 and Rs 423.28 in 1971-72 for medium and large holdings respectively. The decrease in the amount of borrowings per hectare in 1971-72, as compared to 1967-68, for small holdings was again due to lesser amount of borrowings from the co-operative societies in 1971-72. Borrowings per hectare from co-operative societies, however, increased from Rs 30.40 and 43.61 in 1967-68 to Rs 76.91 and 153.22 in 1971-72 for medium and large holdings respectively. Borrowings per hectare from land mortgage banks also witnessed an increase during the corresponding period. Government Taccavi loan per hectare decreased, whereas borrowings from non-institutional sources increased during this period. This may again be due to the quick procedures followed by non-institutional sources as compared to the cumbersome procedures adopted by the institutional sources.

Functional relationship between gross income & production expenditure

To study the response of gross income per hectare, resulting from a change in production expenditure per hectare, linear regression was fitted to the data for all the years, where Y represented per hectare

gross income and X per hectare production expenditure.

Table 5.9

Regression coefficients & their significance

	1967-68	1968-69	1969-70	1971-72
Value of 'b'	.1115 (.3352)	.3517 (.3374)	.7161* (.3069)	1.0017** (.1346)
Elasticity	.0632	.2103	.4042	.4960
R^2	.0039	.0371	.1626*	.6641**
Y = a+bX	1821.22+.1115X	1512.98+.3517X	1476.95+.7161X	1399.93+1.0017X

The coefficient of determination(R^2) was significant at 5 per cent and 1 per cent levels respectively for 1969-70 and 1971-72. Production expenditure elasticities increased from .0632 in 1967-68 to .2103, .4042 and .4960 in 1968-69, 1969-70 and 1971-72 respectively. The increased elasticities indicated the higher relative response in income as a result of shifts in production expenditure.

Socio-economic characteristics and production expenditure

Of all the socio-economic characteristics studied, only the number of earners was significant in influencing the production expenditure in 1971-72(Table 5.10). For the remaining type of ownership, size of family and educational level of the head of the family, the differences in production expenditure were not significant.

Number of earners and production expenditure

Production expenditure was influenced by the increase in the number of earners in 1971-72. Average production expenditure increased from Rs 10847.34 in case of two earners to Rs 33465.54 in case of five and above earners(Table 5.10). 'F' value came to 3.8520, which was significant at 5 per cent level.

Table 5.10

Average Production Expenditure and 'F' Values for testing the Various Characteristics, 1967-68, 1968-69, 1969-70 and 1971-72.

Characteristics	1967-68 Av. Prod. Expenditure	1967-68 d.f.	1967-68 'F' Values	1968-69 Av.Prod Expenditure	1968-69 d.f.	1968-69 'F' Values.	1969-70 Av.Prod. Expenditure	1969-70 D.F.	1969-70 'F' Values.	1971-72 Av.Prod. Expenditure	1971-72 D.F.	1971-72 'F' Values.
1. Type of Ownership												
a. Owners	11139.37	1;28	.3199	11127.56	1;28	.8148	13226.66	1;28	.6961	20219.55	1;28	.4683
b. Part Owners	12481.96			12729.39			16393.77			16236.36		
2. Size of family												
1-3	9262.35			-			6695.20			5238.75		
4-6	14808.79	3;26	1.3913	10131.45	2;27	1.1086	14020.85	3;26	.9222	14814.92	3;26	.7749
7-9	9496.18			10855.19			12332.44			19520.09		
10 & above	12604.16			14281.48			18168.62			19516.45		
3. No. of Earners												
1	10840.75			9647.68			11671.37			--		
2	14428.19	4;25	1.2253	9962.57	4;25	1.1812	10413.99	4;25	1.7565	10847.34	3;26	3.8520
3	9856.16			13297.16			18862.83			14137.51		
4	14344.25			18976.89			6063.68			17702.98		
5 & above	6987.07			12792.70			19793.44			33465.54		
4. Education level of head												
Illiterate	10321.95			11039.96			17713.50			14670.84		*
Primary	14508.00	3;26	1.3143	12940.31	3;26	1.2365	15399.14	3;26	1.7721	19582.47	3;26	2.2688
Middle	15174.55			15826.87			22235.70			31819.99		
Matric & above	10475.55			8087.76			13717.52			11341.59		

* Significant at 5 percent level.

CHAPTER VI

SHIFTS IN EMPLOYMENT AND WAGE RATES

A controversy has arisen over the shifts in employment and wage rates of farm labour, following the technological transformation of agriculture in the recent years. The large-scale introduction of high-yielding varieties of wheat and other technological changes has also resulted into a change in the pattern of employment and wage rates of agricultural labour. An attempt is made in this chapter to study the shifts in employment and wage rates, consequent upon the introduction of high-yielding varieties.

Though the proportion of various forms of capital have changed with the technological breakthrough, yet the hired human labour(both casual and permanent) constituted the major input in 1968-69, 1969-70 and 1971-72 and contributed 25.04, 26.39 and 24.84 per cent of average production expenditure during the corresponding period(Table 5.2). The per holding expenditure on this component increased from Rs 3037.77 in 1967-68 to Rs 4495.20 in 1971-72. The per hectare expenses also increased from Rs 266.51 to 380.54 during the corresponding period. This was the result of both increased employment and rising wage rates in the recent years.

This section is an attempt to work out the magnitude and charges of hired human casual labour for different crops. The results are presented in Table 6.1. It was hypothesized that the use of hired labour would increase following the increased intensity of cropping in the recent years. Labour input per hectare increased from 112.36 hours in 1967-68 to 164.65 hours in 1971-72 for high-yielding varieties of wheat. Labour charges for this crop increased from Rs 88.87 to 182.79, accounting for 105.68 per cent increase during the corresponding period.

Table 6.1

Per hectare input & charges of hired human casual labour for important crops, 1967-68, 1968-69, 1969-70 & 1971-72

Crops	1967-68		1968-69		1969-70		1971-72	
	Hours	Value	Hours	Value	Hours	Value	Hours	Value
Wheat (HYV)	112.36	88.87	95.69	97.88	134.53	129.39	164.65	182.79
Wheat Desi.	113.22	107.60	98.32	113.85	66.09	65.13	-	-
American Cotton.	230.87	152.30	317.87	128.55	346.79	203.51	265.67	202.44
Desi Cotton	232.42	88.72	142.06	64.76	280.40	104.71	212.47	184.96
Paddy.	-	-	124.85	75.05	272.00	135.38	309.56	242.70

This increase came from the expanded use of labour input and higher wages per hour in 1971-72 as compared to 1967-68. Labour input per hectare for desi wheat decreased from 113.22 hours in 1967-68 to 98.32 and 66.09 hours in 1968-69 and 1969-70 respectively. This crop did not find any place in the cropping pattern of the selected holdings in 1971-72. The per hectare use of hired labour for American cotton increased from 230.87 hours in 1967-68 to 265.67 hours in 1971-72. Labour charges per hectare increased from Rs 152.30 to 202.44 during the corresponding period. Labour input for paddy crop, which the selected holdings began to grow from 1968-69 onwards, increased from 124.85 hours in 1968-69 to 309.56 hours in 1971-72. Labour charges per hectare for this crop increased from Rs 75.05 to 242.70 during the corresponding period. Thus the introduction of high-yielding varieties of wheat and paddy has led to the increased use of hired labour.

The per hectare use of hired human casual labour for various crops in case of different sized holdings is given in Table 6.2. Labour input per hectare increased from 134.33 and 93.93 hours in 1967-68 to 208.33 and 155.76 hours in 1971-72 for medium and large sized holdings respectively in case of high-yielding varieties of wheat. The per hectare use of labour input for desi wheat showed no definite trend during this period. It decreased for small and large holdings and increased in case of medium holdings. Labour input per hectare for American cotton increased from 122.53 and 169.41 hours in 1967-68 to 126.06 and 225.67 hours in 1971-72 for small and medium holdings respectively. It stood at almost the same level during this period for the large holdings. Labour charges per hectare for American cotton increased from Rs 70.02, 123.24 and 195.17 in 1967-68 to 98.07, 167.20 and 231.57 in 1971-72 for small, medium and large holdings respectively.

Table - 6.2

Per hectare input & charges of hired human casual labour for important crops for different sized holdings, 1967-68, 1968-69, 1969-70 and 1971-72.

Crop.	1967-68						1968-69					
	Small		Medium		Large		Small		Medium		Large	
	Hours	Value	Hours	Value	Hours	Value	Hours	Value	Hours	Value	Hours	Value
Wheat (HYV)	89.83	68.24	134.33	91.37	93.93	90.67	56.87	56.90	120.32	123.78	81.45	82.92
Wheat Desi	114.75	114.46	107.99	94.71	116.61	115.62	66.38	89.65	85.18	117.18	139.36	116.81
American Cotton	122.53	70.02	169.41	123.24	306.42	195.17	218.02	86.76	245.18	118.25	392.90	148.62
Desi Cotton	70.18	52.63	228.82	92.84	250.31	87.65	98.32	57.15	86.70	59.07	195.07	70.79
Paddy.	-	-	-	-	-	-	-	-	150.75	132.09	118.64	61.35
	1969-70						1971-72					
Wheat (HYV)	68.79	68.84	143.76	169.61	139.08	119.75	51.90	52.17	208.23	198.50	155.76	187.32
Wheat Desi.	37.84	55.86	123.85	110.00	58.68	42.51	-	-	-	-	-	-
American Cotton.	274.16	144.40	356.30	160.66	355.11	245.40	126.06	98.07	225.67	167.20	301.08	231.57
Desi Cotton.	236.21	81.41	256.58	74.21	308.35	130.83	102.86	98.57	279.62	190.59	200.99	189.35
Paddy.	-	-	-	-	272.00	160.37	-	-	450.58	306.54	282.92	230.64

Labour input and charges per hectare for paddy crop increased both for medium and large holdings during this period.

Employment and wage rates

The monthly employment of casual male agricultural labour is given in Table 6.3. It was hypothesized that a shift would take place in the peak labour periods following the introduction of high-yielding varieties. Previously, the peak labour periods were mainly from Oct-Nov, mid-April to end-April and for July-August, which was the time for sowing and harvesting of crops. But with the longer sowing period in case of high-yielding varieties of wheat and paddy and with increased intensity of cropping, stabilization of employment in different months has been taking place in the recent years. Table 6.3 revealed that the working days increased from 13.0 in February to 20.5 in May. The wage rates also experienced an increase from Rs 5.54 to 8.83 during the corresponding period. It further established that although the quantum of employment and the wage rates were positively associated and were the highest in May, yet the variation in employment, over months, was less than that in the wage rates. This was due to the increase in the intensity of cropping, following the introduction of high-yielding varieties of wheat, which gave a better spread of agricultural operations over the whole year and tended to reduce seasonal fluctuations in the employment of labour over different parts of the year.

The money wage rates(weighted for different agricultural operations) for male agricultural labourer increased from Rs 5.64 in 1967-68 to 7.20 in 1971-72(Table 6.4). The per cent increase in money wage rates in 1971-72 over 1967-68 worked out to be 27.66 per cent. Along with the rise in money wages, the consumer price index number

Table 6.3

Month-wise Employment & Wage Rates of Casual Male Agricultural Labourer, 1971-72.

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Month	Working days	Daily Wages (Rs)
July	16.0	6.20
August	18.0	6.53
September	16.0	5.49
October	18.5	6.21
November	17.8	5.46
December	18.2	5.89
January	14.3	5.64
February	13.0	5.54
March	14.8	5.55
April	18.6	8.55
May	20.5	8.83
June	18.0	6.75

TABLE - 6.4

Operation-wise wage rates for casual male agricultural labourer, 1967-68 & 1971-72

(in Rs.)

Operations	1967-68	1971-72
Sowing	6.52	7.32
Hoeing	4.75	6.40
Removing Cotton Sticks.	5.28	6.72
Harvesting	7.56	8.70
Threshing	7.53	8.44
Weighted average	5.64	7.20

(general) for agricultural labourers in the Punjab also increased by 10.47 per cent during the corresponding period. However, the rise in money wages outweighed the increase in consumer price index number, leading to a rise of 15.60 per cent in the real wages during this period. This rise in real wage rate, coupled with the increased employment in different operations for high-yielding varieties of wheat, led to the improvement in the economic condition of agricultural labour.

However, the rise in real wages was proportionately less than the increase in output. Whereas the real wages increased by 15.60 per cent from 1967-68 to 1971-72, there was 59.25 per cent increase in output. The increase in income, during the corresponding period, was higher (32.66 per cent) even for the small holdings than the rise in wages for the agricultural labour.

The annual earnings of casual labour(based on the month-wise employment and wage rate) worked out to be Rs 1320.21 as against Rs 1772.11 for the permanent labour. Even the wages for permanent labour in 1967-68 were higher than that of the casual labour in 1971-72. The study, therefore, showed that the annual earnings of the permanent labour were higher than that of the casual labour.

The introduction of farm machinery has also created a demand for the skilled labour(tractor drivers and tubewell mechanics etc.) in the rural labour market in the recent years. The wage rates of these skilled labour were considerably higher than that of the unskilled labour. Their employment pattern also showed a reasonable measure of stability over months and was likely to shift upward due to the increased demand in the coming years. The study, therefore, indicated the shifts in employment and wage rates with the acquisition of new skills. The acquisition of these skills were quite in line with the nature of demand emerging in the recent years following the technological breakthrough in the agricultural economy of the country.

CHAPTER VII

SHIFTS IN INCOMES OF THE SELECTED HOUSEHOLDS

Technological transformation of the agrarian economy in the Punjab has led to a substantial increase in the incomes of farmers in the recent years. With the adoption of modern techniques and methods of cultivation, the outlook of the farmers towards agriculture has also undergone a tremendous change. They are shedding the traditional outlook of viewing agriculture as a mode of living, and are taking it up as a business. As a result, they are much more conscious, as to what they are making out of farming.

It may be hypothesized that the benefits of new technology are not shared equally by different sized holdings, even in the same area. Small farmers have taken time to catch up with the large holders. In other words, this technological improvement is said to have upset the relatively accepted equilibrium in agriculture in the era of gradual technological change. It may also be characterised by widening disparities in inter-personal incomes. An attempt is, therefore, made in this chapter to study the level and increase in the incomes of farmers over a period of time, in consequence of the introduction of modern technology. The level and increase in incomes for various farm size groups is also examined. The total income per household and per capita of the cultivators is also compared with that of the labour households.

For the purpose of comparing growth of income over time within the cultivator class and between various farm size groups, the term 'Farm Business Income' was adopted. It was obtained by subtracting cost A_2 from the gross income. Gross income comprised the value of main product and byproduct during the year, whether

sold, consumed or stocked. Cost A_2 constituted the costs incurred on seeds, manures, fertilizers, insecticides and pesticides, hired human labour, bullock labour (owned & hired), running expenditure and depreciation on irrigation structures, farm machinery, implements and farm buildings, taxes, cesses, water rates and interest on working capital.

The distribution and the magnitude of per hectare gross income for various years is presented in Tables 7.1 and 7.2. It was hypothesized that gross income per holding and per hectare would increase to enable the cultivators to more than meet the increased input costs associated with the cultivation of high-yielding varieties. The average gross income amounted to Rs 35105.60 in 1971-72 as compared to Rs 22044.19, 20938.60 and 26556.41 from 1967-68 through 1969-70 respectively. The percentage increase in gross income in 1971-72 over 1967-68 was 59.25. As a result, the percentage of holdings having gross income upto Rs 8000 decreased from 10.00 in 1967-68 to 6.67 in 1971-72. On the other hand, the percentage of holdings falling in the income group of Rs 40000 and above increased from 3.33 in 1967-68 to 33.33 in 1971-72.

Gross income per hectare increased from Rs 1911.32 in 1967-68 to Rs 1947.35, 2527.93 and 2971.83 in 1968-69, 1969-70 and 1971-72 respectively. The per cent increase in gross income per hectare over 1967-68 was 1.89, 32.26 and 55.49 during the corresponding period.

Thus we accept the hypothesis that farm gross incomes increased with the adoption of recent technological changes and semi-dwarf high-yielding varieties of wheat in particular.

Table 7.1

Distribution of selected holdings by gross income per holding, 1967-68, 1968-69, 1969-70 & 1970-71.

Gross Income (Rs.)	1967-68			1968-69			1969-70			1971-72		
	Percentage of holdings	Cumulative percentage	Average income per holding	Percentage of holdings	Cumulative percentage	Average income per holding	Percentage of holdings	Cumulative percentage	Average income per holding	Percentage of holdings	Cumulative percentage	Average income per holding
0- 8000	10.00	10.00	5677.78	20.00	20.00	5378.83	10.00	10.00	6094.05	6.67	6.67	6465.50
8000-16000	33.34	43.34	11512.82	16.67	36.67	11771.69	26.67	36.67	10997.37	30.00	36.67	12366.11
16000-24000	23.33	66.67	20131.39	30.00	66.67	19491.45	23.33	60.00	19179.44	13.33	50.00	21386.25
24000-32000	16.67	83.34	29494.20	16.67	83.34	27518.73	-	60.00	-	10.00	60.00	26733.67
32000-40000	13.33	96.67	33189.25	13.33	96.67	36673.87	13.33	73.33	34219.12	6.67	66.67	35653.00
40000 & above	3.33	100.00	87760.00	3.33	100.00	77389.00	26.67	100.00	52410.98	33.33	100.00	69193.85
Overall	100.00	-	22044.19	100.00	-	20938.60	100.00	-	26556.41	100.00	-	35105.60

Table 7.2

Gross income, cost A_2 and farm business income per hectare, 1967-68, 1968-69, 1969-70 and 1971-72

(in Rs)

Year	Gross income	Cost A_2	Farm Business Income
1967-68	1911.32	1004.64	906.68
1968-69	1947.35	1100.01	847.34
1969-70	2527.93	1349.53	1178.40
1971-72	2971.83	1531.84	1439.99

However, it is not only the gross income, but also the cost of cultivation(cost A_2) that rises with the adoption of improved technology. The cost of inputs, which constituted cost A_2, increased from Rs 11586.90 in 1967-68 to Rs 11828.41, 14176.78 and 18095.18 in 1968-69, 1969-70 and 1971-72 respectively(Table 5.1). The percentage increase in this expenditure over 1967-68 was 2.08, 22.35 and 56.17 during the subsequent years. Cost A_2 per hectare also increased from Rs 1004.64 in 1967-68 to Rs 1100.01, 1349.53 and 1531.84 in 1968-69, 1969-70 and 1971-72 respectively(Table 7.2). The per cent increase over 1967-68 came to be 9.49, 34.33 and 52.47 during the corresponding period.

The distribution of farm business income per holding is presented in Table 7.3. It was hypothesized that an increase in incomes in the recent years occurred due to the large scale introduction of high-yielding varieties of wheat. The farm business income per holding amounted to Rs 17010.42 in 1971-72 as compared to Rs 10457.29, 9110.19 and 12379.63 from 1967-68 through 1969-70 respectively. The percentage increase in incomes over 1967-68 came out to be 18.38 and 62.67 in

Table 7.3

Distribution of selected Holdings by Farm Business Income per holdings 1967-68, 1968-69, 1969-70 and 1971-72.

Farm Business Income (Rs.)	1967-68			1968-69			1969-70			1971-72		
	Percentage of holdings	Cumulative percentage	Average income per holding	Percentage of holdings	Cumulative percentage	Average income per holdings	Percentage of holding	Cumulative percentage	Average income per holding	Percentage of holdings	Cumulative percentage	Average income per holding
-4000-0	13.33	13.33	-1565.31	3.33	3.33	-2660.05	-	-	-	-	-	-
0- 4000	23.34	36.67	1849.23	23.34	26.67	1175.39	23.33	23.33	2597.72	20.00	20.00	2142.93
4000- 8000	13.33	50.00	6170.35	26.67	53.34	4991.34	30.00	53.33	6726.23	20.00	40.00	5679.75
8000-12000	20.00	70.00	10596.15	13.33	66.67	9492.09	10.00	63.33	9470.89	10.00	50.00	8860.30
12000-16000	3.33	73.33	12650.50	23.33	90.00	13963.41	10.00	73.33	13876.67	13.33	63.33	13787.89
16000-20000	10.00	83.33	17635.30	-	90.00	-	6.67	80.00	19138.75	3.33	66.66	18019.23
20000-24000	6.67	90.00	20592.30	6.67	96.67	22592.12	10.00	90.00	21385.65	6.67	73.33	20941.95
24000 & above	10.00	100.00	37342.98	3.33	100.00	46948.64	10.00	100.00	40058.42	26.67	100.00	40213.93
Overall	100.00	-	10457.29	100.00	-	9110.19	100.00	-	12379.63	100.00	-	17010.42

1969-70 and 1971-72 respectively. In consequence, some of the selected holdings falling in the lower income group in 1967-68, moved to the higher income groups in the subsequent years with the improvement in their income level. As a result, the percentage of holdings falling in the group of 24000 and above increased from 10.00 in 1967-68 to 26.67 in 1971-72. However, the negative increase in income in 1968-69 over 1967-68 was accounted for by the adverse natural conditions, created by drought in the study area, which had an adverse effect on the yield of crops.

The negative farm business income per holding for some of the selected holdings in 1967-68 and 1968-69 could be attributed to the lack of technical know-how in the matter of proper placement of technological inputs, which led to higher costs with less remunerative results. However, the percentage of holdings having negative farm business income decreased from 13.33 in 1967-68 to nil in 1971-72.

The farm business income per hectare increased from Rs 906.68 in 1967-68 to Rs 1178.40 and 1439.99 in 1969-70 and 1971-72 respectively (Table 7.2). The per cent increase in income per hectare over 1967-68 came out to be 29.97 and 58.82 during the corresponding period. However, the negative increase in farm business income per hectare in 1968-69 over 1967-68 was again forced by an adverse weather conditions in 1968-69.

The distribution of per capita farm business income for various years may be viewed from Table 7.4. Per capita income was very crucial in measuring the levels of living and the consumption standards of the cultivators. The growth of per capita real income has been widely accepted as the measure of economic development of a country. In our case, the growth of per capita income over a period of time implied that the

Table 7.4

Distribution of selected holdings by Farm business Income per capita, 1967-68, ..., 1969-70 and 1971-72.

Farm Business Income (Rs.)	1967-68			1968-69			1969-70			1971-72		
	Percentage	Cumulative percentage	Average income per person	Percentage	Cumulative percentage	Average income per person	Percentage	Cumulative percentage	Average income per person	Percentage	Cumulative percentage	Average income per person
0-500-0	13.33	13.33	-174.08	3.33	3.33	-332.50	-	-	-	-	-	-
- 500	26.67	40.00	224.04	23.33	26.66	156.80	16.67	16.67	358.38	23.33	23.33	254.62
500-1000	20.00	60.00	811.52	36.66	63.32	700.10	40.00	56.67	742.50	16.67	40.00	713.37
1000-1500	10.00	70.00	1254.46	16.67	79.99	1124.57	13.33	70.00	1058.87	20.00	60.00	1088.46
1500-2000	13.33	83.33	1642.44	6.67	86.66	1762.90	10.00	80.00	1832.91	6.67	66.67	1795.98
2000-2500	6.67	90.00	2103.22	6.67	93.33	2055.17	3.33	83.33	2309.80	6.67	73.34	2314.62
2500 & above	10.00	100.00	6176.05	6.67	100.00	3932.55	16.67	100.00	4492.51	26.66	100.00	3551.35
Overall	100.00	-	1301.12	100.00	-	986.60	100.00	-	1507.00	100.00	-	1616.98

incomes of the cultivators were expanding at a faster rate than the rate of growth of population.

It was hypothesized that the increased output from the introduction of high-yielding varieties would excel the population growth rate and lead to higher growth in per capita incomes of the cultivators in the recent years. Per capita farm business income accounted for Rs 1616.98 in 1971-72 as compared to Rs 1301.12, 986.60 and 1507.00 from 1967-68 through 1969-70 respectively. Percentage increase in per capita income over 1967-68 was calculated to be 15.82 and 24.28 in 1969-70 and 1971-72 respectively. However, the negative per capita incomes for some of the selected holdings in 1967-68 and 1968-69 might again be due to the lack of technical skills in the initial stages of the introduction of high-yielding varieties, which resulted into higher input costs. The negative increase in per capita income in 1968-69 over 1967-68 could be attributed to the adverse natural conditions in the study area.

Due to the increase in per capita farm business income in 1971-72 over 1967-68, the percentage of holdings having per capita income upto Rs 1000 decreased from 60.00 in 1967-68 to 40.00 in 1971-72. On the other hand, the percentage of holdings having per capita income of Rs 2500 and above increased from 10.00 to 26.66 in the corresponding years.

Again, it was hypothesized that the gains from the adoption of new technology accrued more to the large holdings than to the small holdings. The farm business income per holding and per hectare according to different farm-size groups is presented in Tables 7.5 and 7.6.

Table 7.5

Gross Income and Farm Business Income per holding for various farm size groups, 1967-68,1968-69,1969-70 & 1971-72

	Gross Income			Cost A2			Farm Business Income		
Year	Small	Medium	Large	Small	Medium	Large	Small	Medium	Large
1967-68	9166.19	17986.08	38372.23	6006.87	10347.27	17855.24	3159.32	7638.81	20516.99
1968-69	6775.57	18791.90	35297.80	4202.39	11693.10	17970.24	2573.18	7098.80	17327.56
1969-70	8987.89	22620.58	46695.96	5038.31	12705.35	24020.01	3949.58	9915.23	22675.95
1971-72	9772.17	21044.51	65540.54	5580.92	11478.92	32740.37	4191.25	9565.59	32800.17

Table 7.6

Gross Income and Farm Business Income per hectare for various farm size groups, 1967-68, 1968-69, 1969-70 & 1971-72.

Year	Gross Income			Cost A2			Farm Business Income		
	Small	Medium	Large	Small	Medium	Large	Small	Medium	Large
1967-68	2320.75	1762.46	1911.93	1481.09	1010.55	922.17	839.66	751.91	989.76
1968-69	1779.82	1982.78	1883.52	1096.01	1233.82	991.82	683.81	748.96	891.70
1969-70	2208.69	2717.00	2452.29	1230.55	1527.42	1285.87	978.14	1189.58	1166.42
1971-72	2574.79	2419.37	3295.40	1439.62	1342.33	1637.39	1135.17	1077.54	1658.01

For small holdings, it was Rs 3159.32 per holding in 1967-68 and increased to Rs 3949.58, 4191.25 in 1969-70 and 1971-72 respectively. An appreciable increase in income per holding was witnessed in both the years owing to the fruition of improved technology. The percentage increase in income over 1967-68 worked out to be 25.01 and 32.66 in 1969-70 and 1971-72 respectively. However, the negative increase in farm business income per holding for all categories of holdings in 1968-69 over 1967-68 came mostly from the adverse weather conditions prevailing in the study area.

In the case of medium holdings, farm business income per holding increased from Rs 7638.81 in 1967-68 to 9915.23 in 1969-70 and to Rs 9565.59 in 1971-72. The percentage increase in income over 1967-68 was 29.80 and 25.22 in 1969-70 and 1971-72 respectively. In the case of large holdings, farm business income per holding increased from Rs 20516.99 in 1967-68 to Rs 22675.95 and Rs 32800.17 in 1969-70 and 1971-72. The percentage increase in income over 1967-68 came out to be 10.52 and 59.87 respectively.

Thus both relative and absolute increases in farm business income per holding were higher for large holdings than that of the small and medium holdings. Increase in income per holding came out to be 59.87 per cent from 1967-68 to 1971-72 in the case of large holdings as compared to 32.66 and 25.22 in the case of small and medium holdings respectively during the corresponding period. The higher relative increase in income at this stage of technological advancement in the case of large holdings may be attributed to their resourcefulness. The higher relative increase in income per holding, as compared to medium holdings, may be attributed to increased irrigation facilities, followed by intensive cultivation of small sized holdings.

In absolute terms, farm business income per holding increased by Rs 12283.18 from 1967-68 to 1971-72 in the case of large holdings as against Rs 1031.93 and 1926.78 in the case of small and medium holdings respectively in the same period.

Again, farm business income per hectare increased from Rs 839.66 in 1967-68 to Rs 978.14 and 1135.17 for small holdings in 1969-70 and 1971-72 respectively. It increased from Rs 751.91 in 1967-68 to Rs 1189.58 and 1077.54 in 1969-70 and 1971-72 respectively for medium holdings. The per hectare income figures for large holdings came to Rs 989.76, 1166.42 and 1658.01 for 1967-68, 1969-70 and 1971-72 respectively. As in the case of farm business income per holding, the increase in farm business income per hectare was also higher in the case of large holdings than that of the small and medium holdings. The percentage increase in farm business income per hectare over 1967-68 worked out to be 67.51 in 1971-72 for large holdings as against 35.19 and 43.31 for small and medium holdings respectively during the corresponding period. The higher relative increase in farm business income per hectare in case of large holdings in 1971-72 over 1967-68 may be attributed to increased intensity of cropping and development of value-oriented cropping patterns by 1971-72.

Concentration of income

To determine concentration of income, the most useful distribution was one, which indicated the share of total income received by various segments of the groups under study. In our case, it means, what particular proportion of the total farm business income was shared by particular proportion of holdings or persons. To find the share of different segments of holdings in the total farm business income, the selected holdings were arranged in ascending order of per holding farm business income

for all the years under study. These holdings were divided into five segments(each with 20 per cent of holdings) and the share of each of these segments in the total farm business income was worked out and is presented in Table 7.7.

It was hypothesized that the concentration of income increased, consequent upon the introduction of modern technology. Table 7.7 reveals that the lower fifth of the holdings shared only -1.80, 0.02, 3.92 and 2.52 per cent of the total farm business income for 1967-68, 1968-69, 1969-70 and 1971-72 respectively. The negative value in 1967-68 indicated that cost A_2 exceeded the gross income for the lower fifth of the holdings. But it did not mean that all the 20 per cent of the holdings had negative farm business income. It signified that the negative income of some of the selected holdings was higher than that of the positive share of the other holdings in this segment during 1967-68. This may be mostly due to the lack of complete technical know-how in the initial stages of the introduction of high-yielding varieties.

The share of the upper fifth of holdings in the total farm business income came out to be 55.03, 50.78, 49.64 and 51.01 for 1967-68, 1968-69, 1969-70 and 1971-72 respectively. This means the top 20 per cent of holdings accounted for about 50 per cent of the total farm business income. However, the concentration of income decreased in 1971-72 as compared to 1967-68. This might be due to the large scale adoption of high-yielding varieties of wheat in 1971-72.

Similar concentration was worked out on per capita income basis and the results are presented in Table 7.8. The lower 20.00 per cent of the population shared only -1.58, 0.01, 5.14 and 2.69 per cent of the total farm business income in 1967-68, 1968-69, 1969-70

Table 7.7

Share of various segments in the total Farm Business Income (Per Holding), 1967-68, 1968-69, 1969-70 and 1971-72 .

Segments	1967-68	1968-69	1969-70	1971-72
Lower fifth	1.80	0.02	3.92	2.52
Second fifth	5.62	8.48	9.31	6.68
Third fifth	15.49	14.86	12.75	13.05
Fourth fifth	25.66	25.86	24.38	26.74
Top fifth	55.03	50.78	49.64	51.01
Total	100.00	100.00	100.00	100.00

TABLE 7.8

Share of various segments in the total Farm Business Income (Per Capita), 1967-68, 1968-69, 1969-70 and 1971-72.

Segments	1967-68	1968-69	1969-70	1971-72
Lower fifth	- 1.58	0.01	5.14	2.69
Second fifth.	4.39	10.14	8.70	8.34
Third fifth.	12.47	15.28	12.06	13.46
Fourth fifth.	21.83	22.18	19.30	28.18
Top fifth.	62.89	52.39	54.80	47.33
Total	100.00	100.00	100.00	100.00

and 1971-72 respectively. The negative value in 1967-68 might again be due to the excess of input costs over gross income for this segment. The share of the upper segment amounted to 62.89, 52.39, 54.80 and 47.33 per cent in the total farm business income in 1967-68, 1968-69, 1969-70 and 1971-72 respectively. The degree of concentration regarding the share of different segments of the population in the total farm business income represented the similar trend as in the case of per holding farm business income due to the similar reasons.

Gini ratios : Lorenz curves were drawn both for holding and for per capita incomes of all the years to depict the concentration of income distribution and are presented in Figures 1 and 2. The Gini ratios were derived from the Lorenz curves, which were obtained by plotting the cumulative percentage of income receiving units on the X-axis against the cumulative percentage of aggregate farm business income received by these units on the Y-axis. However, these Lorenz curves were drawn by using the grouped data. Therefore, inter cell and intra cell biases in each Gini ratio derived from Lorenz curve were likely to creep in.

The concentration ratio for per holding income was the highest for 1967-68 and the lowest for 1969-70(Table 7.9).

Table 7.9

Gini ratios of the distribution of per holding and per capita incomes, 1967-68, 1968-69, 1969-70 & 1971-72

Year	Gini ratio	
	Per holding income	Per capita income
1967-68	.56	.62
1968-69	.50	.49
1969-70	.45	.47
1971-72	.49	.46

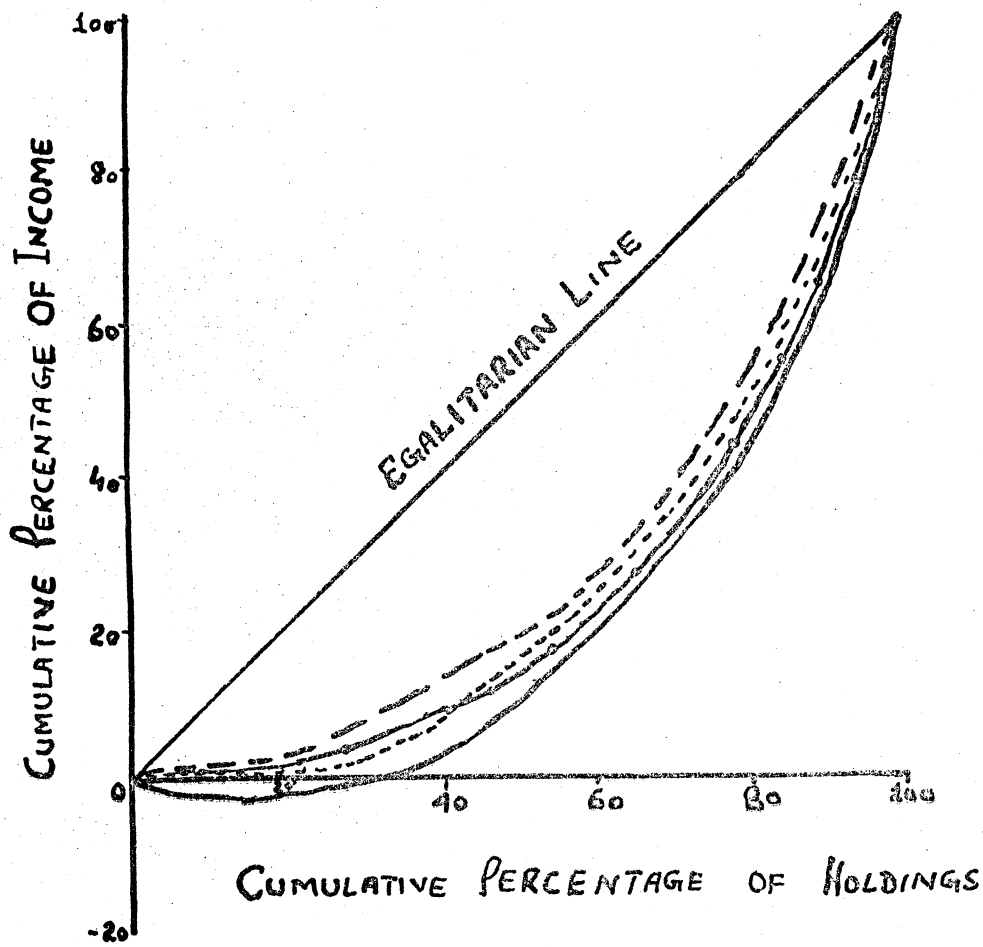

FIG-1. SHARE OF VARIOUS SEGMENTS IN THE TOTAL FARM BUSINESS INCOME (PER HOLDING), 1967-68, 1968-69, 1969-70 & 1971-72

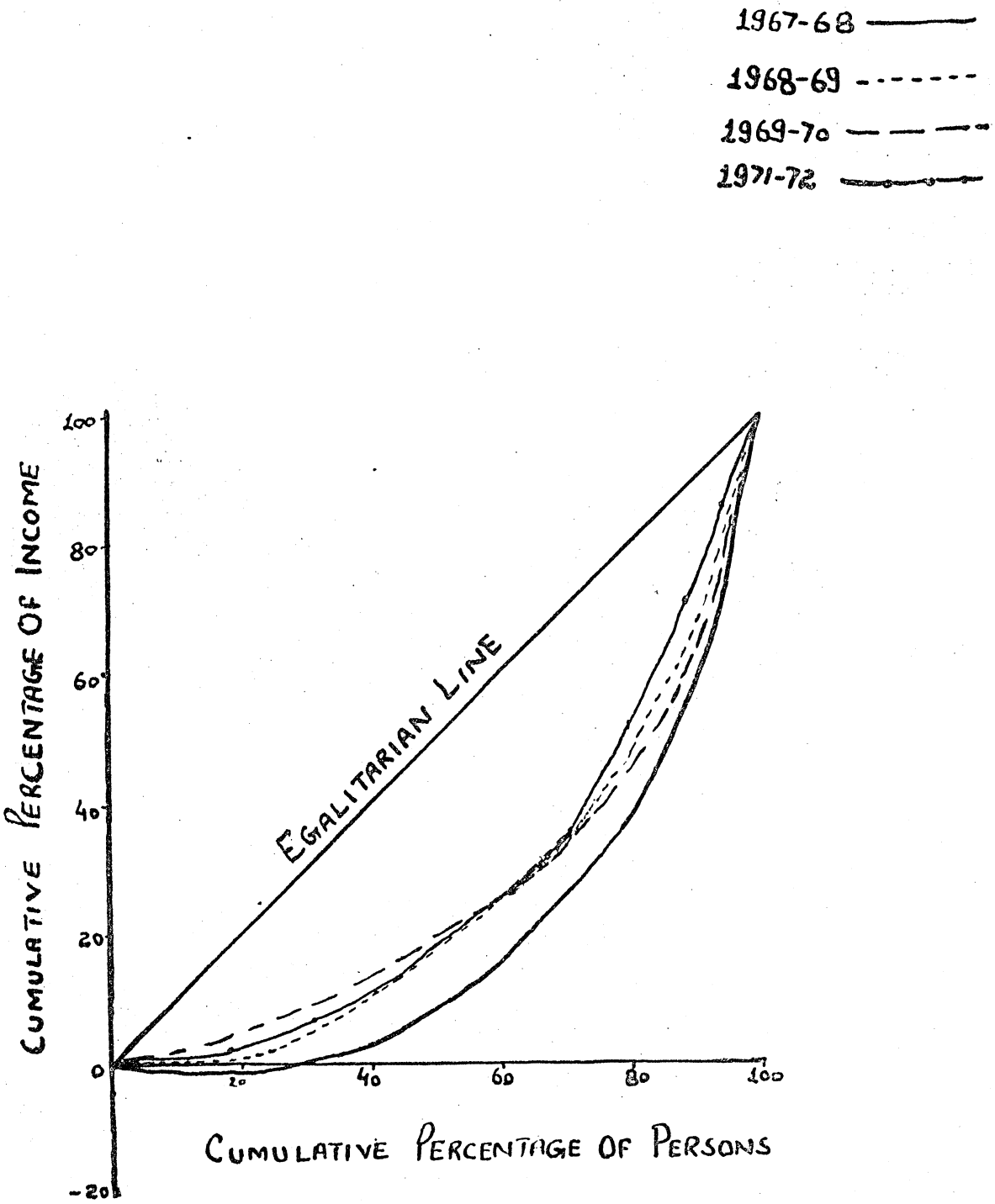

FIG. 2 SHARE OF VARIOUS SEGMENTS IN THE TOTAL FARM BUSINESS INCOME (PER CAPITA), 1967-68, 1968-69, 1969-70 & 1971-72

Again, the Gini ratio for per capita income was the highest in 1967-68 and the lowest for 1971-72. This indicated that the concentration ratio both for per holding and per capita incomes was lower in 1971-72 than that of 1967-68. This might be due to the fact that all holdings witnessed an increase in their farm business income with the introduction of modern technology, though at a differential rate. This had the effect of lowering down the degree of concentration in 1969-70 and 1971-72 as compared to 1967-68.

Determinants of farm business income

An attempt was made to study the differences in the level of incomes associated with certain socio-economic characteristics of the farming population by applying analysis of variance test. The characteristics for which the influence on farm business income was tested, were type of ownership, size of family, number of earners and educational level of the head of the family. Of these characteristics, only number of earners was significant in influencing farm business income in 1971-72 (Table 7.10). For the remaining characteristics, the difference in farm business income was not significant. Average farm business income was discussed only for such characteristics, for which the differences were found to be significant.

Number of earners and farm business income

Average farm business income was influenced by the increase in the number of earners in 1969-70. Average income increased from Rs 10865.16 in case of two earners to Rs 33229.06 in case of five & above earners. 'F' value was 4.0479, which was significant at 5 per cent level.

Total income of the cultivating and the labour households

In this section, an attempt is made to compare the per household and per capita income of the cultivating households with that of the selected labour households. Total income(farm plus non-farm) for the cultivating households, comprised farm business income, income from sale of livestock and livestock products, sale of farm assets, hiring out of farm machinery and income from service and business etc. This

Table 7.10

Average Farm Business Income & F values for testing the various characteristics 1967-68, 1968-69, 1969-70 & 1971-72

Characteristics.	1967-68 Average farm business income	d.f.	'F' value	1968-69 Average farm business income.	d.f.	'F' value.	1969-70 Average farm business income	d.f.	'F' value	1971-72 Average farm business income	d.f.	'F' value
1. Type of ownership												
a Owners.	11582.27	1;28	.4678	9322.76	1;28	.2782	12567.61	1;28	.1305	17610.63	1;28	.8074
b. Part Owners.	8206.62			8688.88			12002.10			15808.95		
2. Size of family.												
1-3	6147.65	3;26	1.3662.	-	2;27	1.1 493	1338.99	3;26	.3717	6882.75	3;26	.6512
4-6	18119.87			8826.55			13581.37			8936.75		
7-9	6103.51			6489.05			11384.29			16408.90		
10 & above.	11949.91			12719.99			14595.88			19540.68		
3. Number of Earners.												
1	4715.53	4;25	1.1821	2736.77	4;25	1.2789	6185.72	4;25	.4354	-	3;26	4.0479*
2	18399.97			6931.99			9216.28			10865.16		
3	8564.56			9951.17			15882.32			7137.24		
4	14895.75			19557.62			6812.04			17666.76		
5. 5 & above.	8765.93			15583.80			29577.56			33229.06		
4. Educational Level of the head of the family.												
Illiterate	9473.56	3;26	1.6037	7985.20	3;26	2.4613	11722.18	3;26	1.4316	15165.35	3;26	2.0338
Primary	11785.50			3420.52			10555.52			25955.53		
Middle	18345.73			17410.72			19968.73			26989.21		
Matric & above	22.86			3429.78			2576.15			2771.41		

* Significant at 5 percent level

income, for the labour households, constituted income from agricultural labour, sale of livestock and livestock products, service, pension and other labour etc.

Average income of the cultivating households amounted to Rs 19088.92 in 1971-72(Table 7.11). It increased from Rs 5947.70 in case of small holdings to Rs 13143.84 and 33281.91 for medium and large holdings respectively. As regards the relative importance of various items of income, farm business income accounted for 89.11 per cent of total income in 1971-72. Sale of farm assets contributed 5.58 per cent, whereas income from service and business amounted to 2.00 per cent of the total income.

The farm business income occupied a key position in the structure of total income of all the three farm size groups. It contributed 70.47 per cent of total income for small holdings and 72.78 and 98.55 per cent for medium and large holdings respectively. Higher relative importance of farm business income for large holdings was due to the lower value of other constituents of total income. The relative importance of income from sale of livestock and livestock products decreased with the increase in farm size. It contributed 12.55 per cent of the total income for small holdings and 2.22 and 1.26 per cent for medium and large holdings respectively. It means that small holdings supplemented their incomes from the sale of milk etc. in the recent years. Again, the income from service and business amounted to Rs 700.00 and 556.92, thus contributing 11.77 and 4.23 per cent of the total income for small and medium holdings respectively. Thus the study showed that large holdings mainly depended upon agriculture for their livelihood because of sufficient farm business income, whereas small and medium holdings adopted non-farm occupations to supplement the farm incomes.

Table 7.11

Total (farm + non farm) Income per holding for various sized cultivating holdings, 1971-72.

Items	Income per Holding			
	Small	Medium	Large	Average.
Farm Business income.	4191.25 (70.47)	9565.59 (72.78)	32800.17 (98.55)	17010.42 (89.11)
Sale of livestock & livestock products.	746.45 (12.55)	292.42 (2.22)	418.1 (1.26)	429.34 (2.25)
Sale of farm assets.	250.00 (4.20)	2344.23 (17.84)	- -	1065.83 (5.58)
Hiring out of farm machinery.	- -	384.62 (2.93)	36.36 (0.11)	180.00 (0.94)
Income from service	200.00 (3.36)	480.00 (3.65)	- -	248.00 (1.30)
Income from business	500.00 (8.41)	76.92 (0.58)	- -	133.33 (0.70)
Others	60.00 (1.01)	- -	27.27 (0.08)	22.00 (0.12)
Total:	5947.70 (100.00)	13143.84 (100.00)	33281.91 (100.00)	19088.92 (100.00)

TABLE 7.12

Per Capita Income (Farm + Non Farm) for various sized cultivating holdings, 1971-72.

Items	Income per Capita			
	Small	Medium	Large	Average
Farm business income.	483.61	1036.27	2437.85	1594.69
Sale of livestock & livestock products	86.13	31.69	31.07	40.25
Sale of farm assets.	28.84	253.96	-	99.92
Hiring out of farm machinery	-	41.67	2.70	16.88
Income from service.	23.08	52.00	-	23.25
Income from business.	57.69	8.33	-	12.50
Others.	6.92	-	2.03	2.06
Total:	686.27	1423.92	2473.65	1789.55

Per capita total income increased from Rs 686.27 in case of small holdings to Rs 1423.92 and 2473.65 for medium and large holdings respectively (Table 7.12). The per capita farm business income amounted to Rs 483.61 for small holdings and 1036.27 and 2437.85 for medium and large holdings respectively. Per capita income from the sale of livestock and livestock products decreased with the increase in farm size. It decreased from Rs 86.13 for small holdings to Rs 31.69 and 31.07 for medium and large holdings respectively. Again, the per capita income from service and business was the highest for small holdings. The large holdings did not receive any income from these sources in 1971-72. It amounted to Rs 80.77 and 60.33 for small and medium holdings respectively.

The per household and per capita income for the labour households is presented in Table 7.13.

Table 7.13

Per household and per capita income for labour households, 1971-72

Items	Per household income	Per capita income
Agricultural labour	1741.44 (76.46)	299.10
Sale of livestock & livestock products	198.33 (8.71)	34.06
Service & pension	208.00 (9.13)	35.73
Other labour	89.65 (3.94)	15.40
Miscellaneous	40.04 (1.76)	6.88
Total	2277.46 (100.00)	391.17

Per household income for the labour households worked out to be Rs 2277.46 in 1971-72. Agricultural labour accounted for the major share, accounting for 76.46 per cent of the total income. Next in importance was income from service and pension. It amounted to Rs 208.00 and constituted 9.13 per cent of the total income. It means that labour households also received income from this source to supplement the income from agricultural labour. The sale of livestock and livestock products came to be Rs 198.33 which formed 8.71 per cent of the total income.

Per capita income worked out to be Rs 391.17 for the labour households in 1971-72. Income from agricultural labour amounted to Rs 299.10. Income from sale of livestock and livestock products and serviced and pension accounted for Rs 34.06 and 35.73 respectively.

The study showed that the per household and per capita income of the cultivating households was higher than that of the labour households. The per household income for the cultivating households was Rs 19088.57, as compared to Rs 2277.46 for the labour households. Even small holdings enjoyed higher per household income(Rs 5947.70) than that of the labour households. Per capita income worked out to be Rs 1789.55 for the cultivating households and Rs 391.17 for the labour households. It amounted to Rs 686.27 for small holdings and Rs 1423.92 and Rs 2473.65 for medium and large holdings respectively. Even small holdings enjoyed 75.44 per cent higher per capita income than that of the labour households.

The income per household and per capita of the cultivating households was higher than that of the labour households, mostly because of the component of farm business income. It established that the disparity in incomes was mainly due to the ownership of the means of production. It was due to the ownership of land and other productive

TABLE 7.14

Distribution of cultivating households by per household total income (farm + non farm), 1971-72.

Income Groups (Rs)	Percentage of holdings.	Cumulative percentage.	Average income per household
0-4000	16.67	16.67	2560.58
4000-8000	13.33	30.00	5979.62
8000-12000	13.33	43.33	9619.85
12000-16000	10.00	53.33	14134.06
16000-20000	10.00	63.33	18274.49
20000-24000	6.67	70.00	22600.56
24000-32000	10.00	80.00	30122.21
32000 & above.	20.00	100.00	44110.66
Overall	100.00	-	19088.92

TABLE 7.15

Distribution of labour households by per household income, 1971-72.

Income Groups (Rs)	Percentage of households.	Cumulative percentage.	Average income per household.
0-1200	6.67	6.67	991.30
1200-1800	31.11	37.78	1443.59
1800-2400	31.11	68.89	1998.91
2400-3000	8.89	77.78	2601.07
3000-3600	6.67	84.45	3203.00
3600 & above.	15.55	100.00	4472.68
Overall	100.00	-	2277.46

assets that the cultivating households enjoyed higher per household and per capita incomes than that of the labour households.

Distribution of income

The distribution of per household income for cultivating and the labour households is presented in Tables 7.14 and 7.15. Table 7.14 shows that 20.00 per cent of the cultivating households enjoyed an annual income of Rs 32000 and above. On the other hand, those having income upto Rs 4000 formed 16.67 per cent. The percentage of households, having an income of Rs 3600 and above was only 15.55 in case of labour households (Table 7.15). On the other hand, the proportion of households with income less than Rs 1800 was 37.78.

Dispersion of income

To measure the divergence of income per household and per capita from their respective averages, two indices of inequality, mean deviation from mean and co-efficient of variation were computed and are presented in Table 7.16.

Table 7.16

Co-efficient of variation and mean deviation from mean of household and per capita income, 1971-72

a. Household income	Cultivating households	Labour households
Mean deviation	12683.76	865.32
C.V.	81.52	50.72
b. Per capita income		
Mean deviation	1159.71	154.67
C.V.	74.83	46.23

The higher the indices, the greater the dispersion of income per household and per capita around the average and, therefore, the greater the inequality among the households within the category. The value of mean deviation of household income was higher(Rs 12683.76) in case of cultivating households than that of the labour households (Rs 865.32). Mean deviation of per capita income was again higher (Rs 1159.71) for cultivating households than that of the labour households (Rs 154.67).

The coefficient of variation was also higher for cultivating households than that of the labour households. The value of this coefficient was 81.52 and 50.72 per cent in case of household income and 74.83 and 46.23 per cent in case of per capita income for cultivating and labour households respectively. Thus per household and per capita income of the cultivating households showed greater variability than that of the labour households.

Concentration of income

For the purpose of studying concentration, the share of various segments of households and persons in the total income was examined and in presented in Table 7.17. The study showed that lower fifth of the households shared 3.06 per cent of total income in case of cultivating households and 10.08 per cent in case of labour households. The upper fifth of the households accounted for 46.22 and 36.87 per cent of the total income in case of cultivating and labour households respectively.

The lower 20.00 per cent of the population shared only 3.58 per cent of the total income in case of cultivating households and 9.77 per cent in case of labour households. On the other hand, the share of the/

/upper

Table 7.17

Share of various segments in the household and per capita income of cultivating and labour households, 1971-72

Segments	Cultivating Households.		Labour Households.		Total	
	Household income	Per capita income.	Household income.	Per capita income	Household income	Per capita income
Lower fifth.	3.06	3.58	1 0.08	9.77	2.84	4.58
Second fifth	8.29	8.36	14.31	14.39	4.16	7.32
Third fifth.	15.46	17.69	16.84	18.23	6.55	10.11
Fourth fifth.	26.97	27.85	21.90	22.08	16.90	18.12
Top fifth.	46.22	42.52	36.87	35.53	69.55	59.87
Total	100.00	100.00	100.00	100.00	100.00	100.00

20.00 per cent of population amounted to 42.52 and 35.53 per cent of the total income for cultivating and labour households respectively.

When the per household income of both the cultivators and the labourers was put together, the share of lower fifth of the households came to 2.84 per cent only but that of the upper segment rose to 69.55 per cent of the total income. Similarly, the share of the lower fifth and the upper fifth worked out to be 4.58 and 59.87 per cent respectively in case of per capita income. This pointed up to the higher inter-category concentration as compared to the intra-category concentration.

Gini ratios

The Gini ratios were derived from the Lorenz curves(Figs 3 & 4) which were obtained by plotting the cumulative per cent of income receiving units on the X-axis against the cumulative percentage of total income received by these units on the Y-axis. These curves were drawn both for per household and per capita income of the cultivating and the labour households and for the cultivating and labour households taken together.

Table 7.18

Gini ratio of the distribution of per household and per capita incomes,1971-72

Category	Per household income	Per capita income
Cultivating households	.43	.40
Labour households	.26	.26
Total households	.59	.49

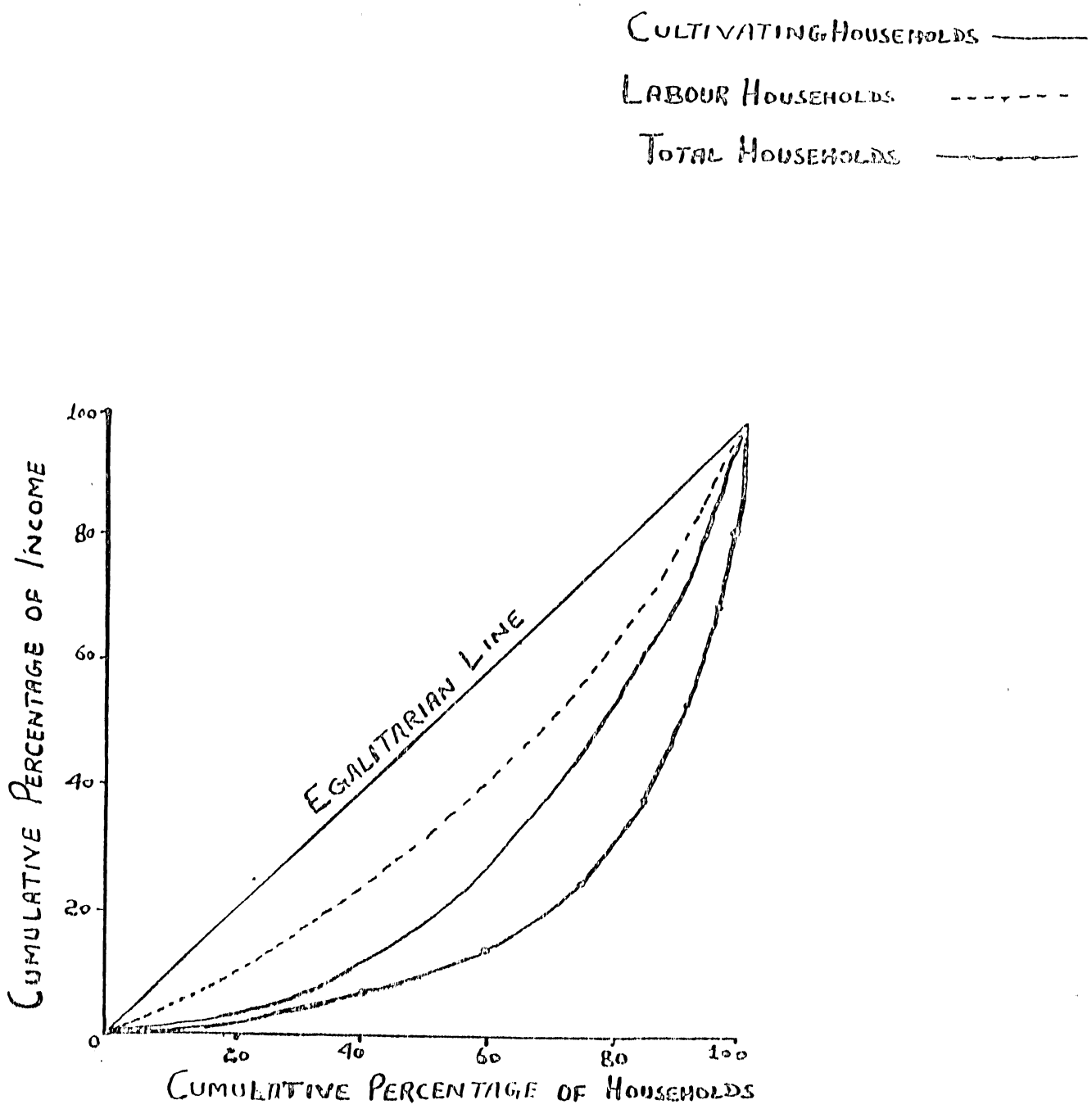

FIG. 3 SHARE OF VARIOUS SEGMENTS IN THE TOTAL INCOME (PER HOUSEHOLD) 1971-72

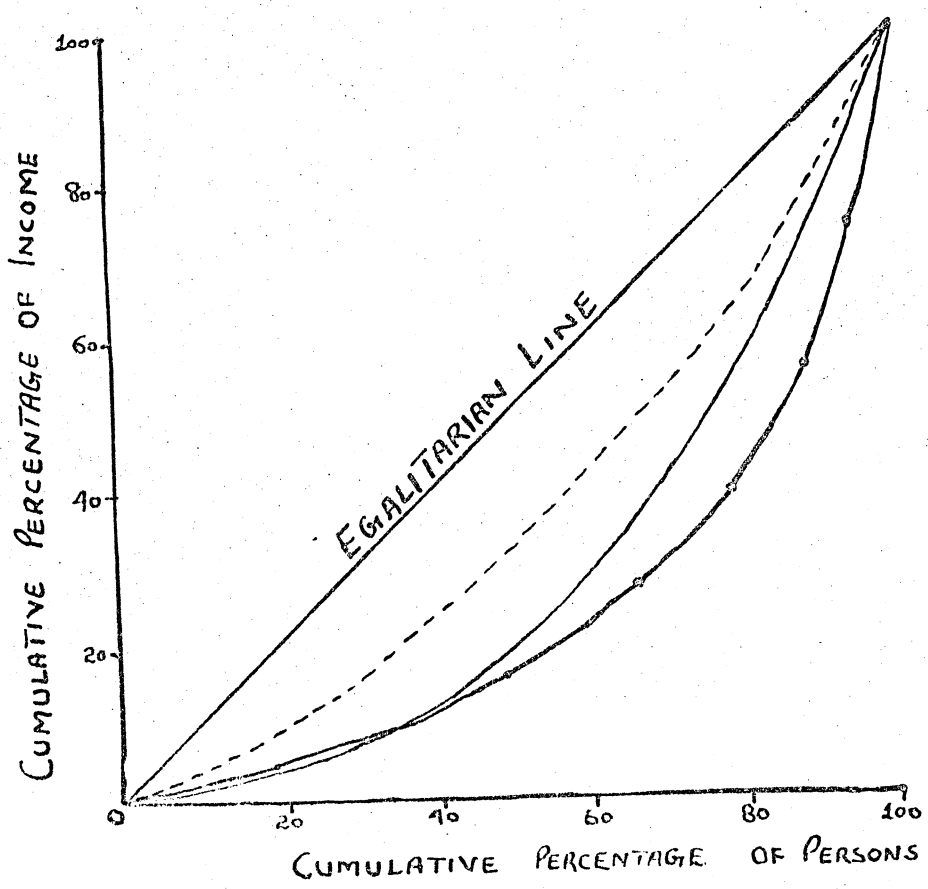

FIG. 4 SHARE OF VARIOUS SEGMENTS IN THE TOTAL INCOME (PER CAPITA) 1971-72

The concentration ratio for per household income was higher (.43) for cultivating households than that of the labour households. It came to .40 and .26 in case of per capita income for cultivating and labour households respectively. There was thus more uneven income distribution for the cultivating households as compared to that of the labour households.

CHAPTER VIII

DISPOSAL OF FARM PRODUCE

The technological breakthrough in agricultural production has promoted the transformation of the farm economy from subsistence level to a profitable farm business approach in the recent years. The large scale introduction of high-yielding varieties of wheat has generated the second-generation effects by motivating the farmers to become increasingly market oriented. The marketed surplus in the case of wheat in the Punjab increased by 250 per cent by 1970-71 as compared to 1966-67, against an increase of about 100 per cent in production. Its proportion of production increased from 33.5 per cent in 1967-68 to 56.9 per cent in 1970-71. This chapter is devoted to a study of the proportion of marketed surplus to total production of the selected holdings in the wake of introduction of new technology.

The marketed surplus and its proportion to total production for various crops is shown in Table 8.1. Per holding production of wheat (HYV) increased from 65.95 quintals in 1967-68 to 249.40 quintals in 1971-72. The per cent increase in production over 1967-68 worked out to be 278.17 in 1971-72. The marketed surplus of this crop increased from 41.40 quintals in 1967-68 to 191.62 quintals in 1971-72, giving an increase of 362.85 per cent during this period. Thus there was proportionately greater increase in marketed surplus than in production during this period. The proportion of marketed surplus to total production increased from 62.77 in 1967-68 to 76.83 per cent in 1971-72. The proportion of marketed surplus to production in case of desi wheat was 51.50 in 1967-68 but this crop did not find any place in the cropping pattern of the selected holdings in 1971-72.

Table 8.1

Production and marketed surplus per holding for different crops, 1967-68 and 1971-72.

Crop	1967-68			1971-72		
	Production (in qtls)	Marketed surplus (in qtls)	Proportion of marketed surplus to production.	Production (in qtls)	Marketed surplus (in qtls)	Proportion of marketdd surplus to production.
Wheat (HYV)	65.95	41.40	62.77	249.40	191.62	76.83
Wheat desi	81.83	42.14	51.50	-	-	-
Cotton (A)	26.28	25.79	98.15	36.57	36.53	99.91
Cotton desi	4.75	2.17	45.80	8.50	7.08	83.33
Paddy	0.40	0.33	83.33	66.33	62.35	93.99

The production of paddy increased from 0.40 quintal in 1967-68 to 66.33 quintals in 1971-72. This came mostly from expanded acreage under this crop during 1971-72. The marketed surplus of this crop increased from 0.33 qtl to 62.35 qtls during the corresponding period. The per holding production of American cotton increased from 26.28 qtls in 1967-68 to 36.57 qtls in 1971-72, which gave an increase of 39.16 per cent during the corresponding period. The marketed surplus of this crop increased from 25.79 qtls in 1967-68 to 36.53 qtls in 1971-72. The per cent increase worked out to be 41.64 during this period. The proportion of marketed surplus to total production of American cotton increased from 98.15 in 1967-68 to 99.91 in 1971-72. The proportion of marketed surplus of desi cotton to total production also increased from 45.80 to 83.33 during the corresponding period. Thus significant increases in acreage and production came from wheat and rice crops, which have experienced greater technological breakthrough.

The marketed surplus and its proportion to production in case of different sized holdings is shown in Table 8.2. The per holding production of high-yielding varieties of wheat increased from 24.40 qtls in 1967-68 to 67.33 qtls in 1971-72 for small holdings. The percentage increase in the production of this crop in 1971-72 over 1967-68 worked out to be 175.94. The marketed surplus increased from 5.71 qtls in 1967-68 to 43.83 qtls in 1971-72, which gave an increase of 667.60 per cent during this period. The proportion of marketed surplus to total production increased from 23.42 in 1967-68 to 65.10 in 1971-72 for small holdings. In case of medium holdings, the production of wheat (HYV) per holding increased from 60.47 quintals in 1967-68 to 146.00 qtls in 1971-72, and gave 141.44 per cent increase in production during the corresponding period. The marketed surplus increased from 30.92 qtls

Table 8.2

Production and marketed surplus per holding for different sized holdings, 1967-68 and 1971-72.

1967-68

Crop	Small			Medium			Large		
	Production (in qtls)	Marketed surplus (in qtls)	Proportion of marketed surplus to production.	Production (in qtls)	Marketed surplus (in qtls)	Proportion of marketed surplus to production.	Production (in qtls)	Marketed surplus (in qtls)	Proportion of marketed surplus to production.
Wheat(HYV)	24.40	5.71	23.42	60.47	30.92	51.13	106.79	85.45	80.01
Wheat Desi	25.46	7.93	31.16	53.95	17.59	32.61	169.04	106.92	63.25
Cotton (A)	10.28	10.28	100.00	19.68	19.14	97.24	48.98	48.20	98.41
Cotton Desi.	2.54	1.49	58.53	5.91	1.90	32.16	4.66	3.14	67.34
Paddy.	-	-	-	0.86	0.71	83.33	-	-	-

1971-72

Crop	Small			Medium			Large		
	Production (in qtls)	Marketed surplus (in qtls)	Proportion of marketed surplus to production.	Production (in qtls)	Marketed surplus (in qtls)	Proportion of marketed surplus to production.	Production (in qtls)	Marketed surplus (in qtls)	Proportion of marketed surplus to production.
Wheat(HYV)	67.33	43.83	65.10	146.00	97.73	66.94	470.91	383.18	81.37
Wheat Desi	-	-	-	-	-	-	-	-	-
Cotton(A)	12.67	12.50	98.68	28.15	28.15	100.00	59.54	59.54	100.00
Cotton Desi.	2.02	1.43	70.83	4.58	3.61	78.99	16.68	14.27	85.56
Paddy.	-	-	-	19.00	16.19	85.22	158.45	150.90	95.24

in 1967-68 to 97.73 qtls in 1971-72, showing an increase of 216.07 per cent during this period. Its proportion to total production increased from 51.13 in 1967-68 to 66.94 per cent in 1971-72. For large holdings, the production of this crop increased from 106.79 qtls in 1967-68 to 470.90 qtls in 1971-72. The percentage increase in production over 1967-68 worked out to be 340.96 in 1971-72. The marketed surplus increased from 85.45 qtls in 1967-68 to 383.18 qtls in 1971-72, thereby giving an increase of 348.43 per cent during this period. The proportion of marketed surplus to total production increased from 80.01 in 1967-68 to 81.37 in 1971-72. It means that the marketed surplus of wheat(HYV) increased more than proportionately to production for all the three farm size groups. This increased surplus for all holdings might create formidable second generation problems in terms of marketing and transport bottlenecks.

The proportion of marketed surplus to total production in case of desi wheat came to 31.16 per cent for small holdings and 32.61 and 63.25 per cent for medium and large holdings respectively in 1967-68. This crop, however, did not find any place in the cropping pattern of the selected holdings in 1971-72.

The production of paddy increased from nil in 1967-68 to 158.45 qtls in 1971-72 for the large holdings. Its marketed surplus amounted to 150.90 qtls and accounted for 95.24 per cent of production in 1971-72. The production of this crop increased from 0.86 qtl in 1967-68 to 19.00 qtls in 1971-72 on medium holdings. As a result, the marketed surplus increased from 0.71 to 16.19 qtls during the corresponding period. In case of American cotton, the proportion of marketed surplus to total production increased from 97.24 and 98.41 in 1967-68 to 100.00 and 100.00 in 1971-72 for the medium and large holdings respectively. It means that the production and its marketed proportion increased in case of almost

all the crops over this period, for different sized holdings.

The increased magnitude of marketed surplus led to the increase in cash receipts from different crops over this period. Total cash receipts per holding from wheat (HYV) increased from Rs 3112.62 in 1967-68 to Rs 14367.16 in 1971-72(Table 8.3). The marketing charges also increased with increase in cash receipts during the corresponding period. It increased from Rs 4.88 per thousand of cash receipts in 1967-68 to Rs 8.41 per thousand in 1971-72. Net receipts per holding from high-yielding varieties of wheat increased from Rs 3097.43 in 1967-68 to Rs 14246.33 in 1971-72. The per cent increase in the receipts over 1967-68 worked out to be 359.94 in 1971-72. Similar trend was observed in cash receipts from American cotton. The net cash receipts from this crop increased from Rs 4328.56 in 1967-68 to Rs 8461.68 in 1971-72, which gave 95.48 per cent increase during the corresponding period. The per holding cash receipts from cotton desi also increased during this period. In case of paddy, the per holding receipts witnessed a manifold increase in 1971-72 over 1967-68 owing to the expanded area under this crop in 1971-72. To summarise, the cash receipts per holding increased, in 1971-72 over 1967-68, for all the important crops except for wheat desi, which the sample cultivators did not grow in 1971-72.

The per holding cash receipts(crop-wise) for different sized holdings is presented in Table 8.4. The total cash receipts from wheat (HYV) increased from Rs 430.22 in 1967-68 to Rs 3331.33 in 1971-72 in case of small holdings. The net cash receipts also witnessed a manifold increase from Rs 428.48 to Rs 3309.19 during the corresponding period. In case of medium holdings, the total cash receipts per holding from this crop increased from Rs 2358.51 in 1967-68 to Rs 7439.00 in 1971-72. The marketing charges also increased from Rs 16.68 to 71.47 during the

Table 8.3

Per holding Cash Receipts for Various Crops, 1967-68 & 1971-72.

Crops	1967-68			1971-72		
	Total Cash Receipts.	Marketing Charges.	Net cash Receipts.	Total cash Receipts.	Marketing Charges.	Net cash Receip
Wheat (HYV)	3112.62	15.19	3097.43	14367.16	120.83	14246.33
Wheat Desi	3355.31	30.25	3325.06	-	-	-
Cotton American	4341.90	13.34	4328.56	8492.50	30.82	8461.68
Cotton Desi	240.16	3.04	237.12	1013.50	9.19	1004.31
Paddy.	16.68	0.13	16.55	3105.50	51.00	3054.50

Table 8.4

Per holding Cash Receipts of various Crops for different Sized holdings, 1967-68 & 1971-72

Crops.	Small			Medium			Large		
	Total cash Receipts.	Marketing Charges	Net cash Receipts.	Total cash Receipts.	Marketing Charges	Net cash Receipts.	Total cash Receipts.	Marketing Charges	Net cash Receipts.
1967-68									
Wheat(HYV)	430.22	1.74	428.48	2358.51	16.69	2341.82	6372.00	23.31	6348.69
Wheat Desi	643.22	10.71	632.51	1386.35	20.75	1365.60	8527.53	60.21	8467.32
Cotton American	1794.31	7.88	1786.43	3169.74	8.83	3160.91	8146.72	24.60	8122.12
Cotton Desi	162.09	0.69	161.40	208.83	3.70	205.13	349.61	3.83	345.78
Paddy.	-	-	-	35.75	0.29	35.46	-	-	-
1971-72									
Wheat(HYV)	3331.33	22.14	3309.19	7439.00	71.47	7367.53	28574.55	232.99	28341.56
Wheat Desi.	-	-	-	-	-	-	-	-	-
Cotton	2812.50	7.58	2804.92	6723.08	29.23	6693.85	13681.82	45.36	13636.46
Cotton Desi	200.00	1.82	198.18	483.46	8.80	474.66	2083.64	13.68	2069.96
Paddy.	-	-	-	809.62	33.77	775.85	7512.73	99.21	7413.52

corresponding period. The per holding net cash receipts increased from Rs 2341.82 in 1967-68 to 7367.53 in 1971-72. In case of large holdings, the net cash receipts per holding increased from Rs 6348.69 in 1967-68 to Rs 28341.56 in 1971-72. Thus the net cash receipts from wheat(HYV) witnessed a manifold increase in 1971-72 over 1967-68, for all the three sized holdings. It was owing to the large scale introduction of these varieties by all holdings in 1971-72.

The per holding net cash receipts from paddy increased from Rs 35.46 in 1967-68 to Rs 775.85 in 1971-72 for medium holdings. The large holdings, which did not grow paddy in 1967-68, accounted for Rs 7413.52 cash receipts per holding in 1971-72. The per holding cash receipts from American cotton and cotton desi also increased for all the three sized holdings during this period.

The increased production and the marketed surplus of important crops in the recent years has paved the way for expanding transportation facilities from the village to the market. The approach road in Bhinder Kalan and Faqarsar was constructed in 1967-68 and 1969-70 respectively. Its construction facilitated the plying of trucks and tractors for transporting fertilizers from the marketing society to the village co-op. society and for carrying the produce from the village to the market.

The increased production of wheat necessitated the marketing facilities in Bhinder Kalan. It also led to the change in the relative importance of different modes of transportation from the village to the market. The use of the tractor-trolley has increased, whereas the use of the bullock-cart has declined. The study showed that tractor-trolley transported 51.98 per cent of wheat(HYV) in 1967-68, which increased to 86.92 per cent during 1971-72. On the other hand, the percentage of

wheat transported through bullock-cart decreased from 37.52 per cent in 1967-68 to 10.89 per cent in 1971-72. The use of truck was also made for transporting 5.35 per cent of paddy in 1971-72.

Improvements in the factor market

The increased use of fertilizers and insecticides motivated the private traders to enter the market for the supply of these inputs. The study revealed that the percentage share of cooperatives in the supply of fertilizers to the selected cultivators decreased from 87.51 in 1967-68 to 76.46 in 1971-72. On the other hand, the percentage share of private agencies increased from 12.49 to 23.54 during the corresponding period. The reasons for preferring private agencies to co-operatives, by the selected cultivators, related to their correct weighment(96.67 per cent cultivators responding), availability of fertilizers of one's preference(86.67 per cent), fresh supplies(73.33 per cent), good condition of the containers(63.33 per cent) and lower prices of fertilizers(53.33 per cent).

The selling points of these agencies(supplying fertilizers) were located in the nearby towns/markets and their sale promotion representatives convassed, among the farmers for the increased use of fertilizers of their make. The number of these agencies increased from 10 in 1967-68 to 25 in 1971-72. Their volume of business also expanded during the corresponding period. The value of fertilizers sold by these agencies increased from Rs 1430 thousand in 1967-68 to 7248 thousand in 1971-72. The percentage increase in the volume of business worked out to be 406.85 during the corresponding period. The reasons advanced by the proprietors for the establishment of their concerns were that they visualized better prospects in the business(68 per cent), because

of increased demand following the introduction of high-yielding varieties (36 per cent) and because they were already working as commission agents and could have better selling capacity in consequence of having contacts with the cultivators(24 per cent).

The seed supply agencies witnessed a phenomenal increase in the volume of their business in 1971-72 over 1967-68. The value of seed supplied by these agencies increased from Rs 399.50 thousand in 1967-68 to Rs 1003.50 thousand in 1971-72. The percentage increase worked out to be 151.19 during the corresponding period. The National Seed Corporation appointed agents for the supply of certified seeds to the farmers. The reasons for the establishment of private seed shops were (i) better prospects(55.56 per cent) and (ii) non-existence of Government seed shops in the nearby towns/markets(44.44 per cent). The National Seed Corporation made arrangements for the supply of seed because the private agencies did not hesitate to sell seed of inferior quality.

The suppliers of insecticides located in the nearby towns/markets, increased from 7 in 1967-68 to 13 in 1971-72. The value of insecticides sold by these agencies increased from Rs 512 thousand in 1967-68 to 1272 thousand in 1971-72. The percentage increase in the volume of business worked out to be 148.44 during the corresponding period. The reasons for the establishment of these agencies related mostly to increased demand, which was further reinforced by a subsidy for oil seed and cotton spray.

The agencies, which supplied agricultural implements, also multiplied during this period in the wake of expanded use of farm machinery by the cultivators. Of the 39 agencies, which supplied agricultural implements in 1971-72, 28.21 per cent came into existence from 1967-68 onwards. About 36.37 per cent of the agencies, which came into existence

during this period, dealt exclusively with the sale of threshers/drummies, 18.18 per cent with threshers, seed drills and cultivators, 9.09 per cent with oil engines and electric motors and 9.09 per cent with all kinds of minor implements. About 27.27 per cent of the agencies were dealing with the sale/supply of tractors and allied equipment.

The value of various types of agricultural implements sold/supplied by these agencies increased from Rs 3552 thousand in 1967-68 to 7656 thousand in 1971-72(Table 8.5). The percentage increase in the magnitude of business worked out to be 115.54 during the corresponding period.

Table 8.5

Value of different agricultural implements sold, 1967-68 and 1971-72

(Rs in thousand)

Type of implements	1967-68	1971-72
1. Tractor & allied equipment	1065	1865
2. Oil engines & electric motors	1405	2915
3. Threshers/drummies	620	1669
4. Other implements	462	1207
Total	3552	7656

The sale of oil engines and electric motors occupied the first position by contributing 39.56 and 38.07 per cent of the total sales in 1967-68 and 1971-72 respectively. The value of sales from tractors and allied equipment increased from Rs 1065 thousand in 1967-68 to Rs 1865 thousand in 1971-72. This component occupied 29.98 and 24.36 per cent of the total sales during 1967-68 and 1971-72 respectively. The magnitude

of sales from threshers/drummies increased from Rs 620 thousand in 1967-68 to 1669 thousand in 1971-72, which gave 169.19 per cent increase during this period. The percentage share of sales from this component to the total sales also increased from 17.45 in 1967-68 to 21.80 in 1971-72. The value of sales of other implements also increased during this period.

The reasons advanced for the establishment of these agencies, related to increased demand derived from mechanization(56.41 per cent), chances of higher profits(46.15 per cent), demonstration effect(15.39 per cent) and for fulfilling the current need of the farmers(5.13 per cent).

The increased use of farm machinery again led to the increase in the number of repair/service units in the nearby towns/markets. The number of servicing & repairing workshops increased from 15 in 1967-68 to 32 in 1971-72. About 41.18 per cent of the workshops, which were established after 1967-68, dealt exclusively with the repair of tractors, 17.65 per cent with oil engines and 11.76 per cent with both tractors and diesel engines. Thus the number of tractor repairing workshops increased with the increase in the number of tractors in the recent years.

The reasons advanced by the proprietors/managers, for the establishment of their workshops, related to bright business prospects from increased mechanization(56.25 per cent), experience of working in repairing workshop for quite a long time(15.62 per cent), along with supply of agricultural implements, essential repairing facilities (12.50 per cent), non-existence of any good workshop for the repair of diesel engines(9.38 per cent) and the current need of farmers (6.25 per cent).

The increased use of capital and credit requirements and nationalization of 14 big commercial banks has led them to enter in the

field of agricultural finance in a big way. They have opened branches in rural and semi-urban areas for the purpose of promoting agricultural advances.

Table 8.6 shows the contribution of commercial banks(which were located in the nearby towns/markets) in the field of agricultural finance. The total agricultural advances in these branches increased from Rs 912.50 thousand in 1969-70 to Rs 2136.40 thousand in 1971-72. The percentage increase in the advances worked out to be 134.13 during the corresponding period.

Table 8.6

Purpose-wise break-up of agricultural advances, 1969-70 and 1971-72

(Rs in thousand)

Purpose	1969-70	1971-72
Tractor	750.50 (82.25)	1712.90 (80.18)
Tubewell	92.00 (10.08)	110.00 (5.15)
Dairy	40.00 (4.38)	125.00 (5.85)
Poultry	24.00 (2.63)	84.00 (3.93)
Crop loan	6.00 (0.66)	104.50 (4.89)
Total	912.50 (100.00)	2136.40 (100.00)

The advances for the purchase of tractors increased from Rs 750.50 thousand in 1969-70 to Rs 1712.90 thousand in 1971-72. The percentage share of advances in this component to total advances amounted to 82.25 and 80.18 in 1969-70 and 1971-72 respectively. The loan for the purpose of purchasing tubewells increased from Rs 92.00 thousand to Rs 110.00

thousand during the corresponding period. The advances for dairying and poultry increased from Rs 64.0 thousand in 1969-70 to Rs 209.0 thousand in 1971-72. The percentage share of advances for this purpose to total advances increased from 7.01 to 9.78 during the corresponding period. The crop loan also increased from Rs 6.0 thousand in 1969-70 to 104.5 thousand in 1971-72. The per cent share of this component to total advances increased from 0.66 to 4.89 during the corresponding period. All this indicated the increased participation of commercial banks in the field of agricultural finance.

In addition to the entry of commercial banks for agricultural advances, Small Farmer Development Agency also functionedin the Ferozepur District for the benefit of the small farmers. This agency made necessary arrangements for facilitating loans(with a provision of subsidy) for farmers owning land upto 7.5 acres. The purpose for which the advances were made, related to minor irrigation and joint irrigation scheme, land levelling & improvement of land, dairying and poultry, supply of improved implements and arrangements for custom hiring etc. Since the inception of the agency in Ferozepur District, the purpose-wise break-up of advances and subsidies upto January 31,1973 is given in Table 8.7.

Table 8.7
Loans advanced through SFDA upto January 31, 1973
(Rs in thousand)

Purpose	No. of cases	Amount advanced	Subsidy
Minor irrigation	1690	8010.0	631.4
Dairy	13 (197 members)	440.0	110.0
Poultry	4 (66 members)	110.0	27.5
Others	101	324.0	81.0
Total	1808	8884.0	849.9

The agency facilitated loans of Rs 8010.0 thousand to 1690 small farmers for the installation of tubewells. Advances for dairying and poultry amounted to Rs 550.0 thousand. The total subsidy given on the loans advanced was estimated at Rs 849.9 thousand upto Jan. 31,1973, which indicated the Government concern for improving the lot of small farmers.

Increased production and expanded marketed surplus, resulting from the adoption of high-yielding varieties of wheat, have necessitated the expansion of storage facilities. The Food Corporation of India, Markfed and Civil Supply Department have expanded storage facilities which are indicated in Table 8.8.

Table 8.8

Storage capacity with different agencies, 1967-68 and 1971-72

(thousand metric tons)

Agency	1967-68	1971-72
Food Corporation of India	33.00	170.0
Markfed	0.8	20.0
Civil Supply Deptt.	0.5	15.0
Central Warehousing Corporation	5.0	20.0
Total	39.3	225.0

The storage capacity of these agencies increased from 39.3 thousand metric tons in 1967-68 to 225.0 thousand metric tons in 1971-72. The percentage increase in the storage capacity worked out to be 472.52 during the corresponding period. Since the proportion of marketable surplus has increased at a faster rate than the increases in production, there is a need for further expansion of the storage facilities both at the farm and the market level.

CHAPTER IX

CHANGES IN INVESTMENT BEHAVIOUR

Capital investment in agriculture occupies a pivotal position in increasing farm production, augmenting agricultural income and maintaining the rising trend in agricultural productivity over a period of time. The contribution of investment to the growth of farm output mainly depends upon the pattern and composition of investment and the technological forms taken by capital investment.

In the initial stages of the introduction of high-yielding varieties, capital investment made for the direct expansion of productive capacity may be substituted for such capital investment, which has only indirect effect on productive capacity. The pattern of investment of a country, in which the former is more important than the latter, tends to lead to a higher rate of growth of output. An attempt is made in this chapter to study the behaviour of farm investment and particularly its impact on increased incomes.

Components of investment

Total investment was divided into three groups, comprising farm, household and non-farm investment. Farm investment included investment in farm machinery, major and minor implements, draught and milch animals, purchase of land and irrigation structure and the construction of farm buildings. Non-farm investment constituted investment in transport business. Household investment comprised investment in education. It was included because the current emphasis on capital formation tended to over-estimate the importance of investment in physical capital and correspondingly under-estimate the importance in human beings. As

Dr. Kusnets has observed, the major stock of a nation is not its physical equipment; the essential investments is largely in human beings not in sticks, stones and metal.

Gross income and total investment

Total investment per holding amounted to Rs 7609.95, comprising 21.68 per cent of average gross income 1971-72(Table 9.1).

Table 9.1

Gross income and total investment per holding 1967-68, 1968-69, 1969-70 and 1971-72

Year	Gross income (Rs)	Total investment (Rs)	Proportion of investment to gross income
1967-68	22044.19	4075.51	18.49
1968-69	20938.60	3441.35	16.44
1969-70	26556.41	3931.89	14.81
1971-72	35105.60	7609.95	21.68

Total investment was estimated at Rs 4075.51, 3441.35 and 3931.89 from 1967-68 through 1969-70, which contributed 18.49, 16.44 and 14.81 per cent of average gross income during the corresponding period. The percentage increase in investment in 1971-72 over 1967-68 worked out to be 86.72. The smaller proportion of total investment in 1968-69 and 1969-70, as compared to 1967-68, was due to the lower investment in farm machinery and irrigation structure in these years.

The magnitude and relative importance of various components of total investment are presented in Table 9.2. It was hypothesized that productive farm investment would show an increasing trend, consequent

Table 9.2

Avenage farm, household and non-farm investment 1967-68, 1968-69, 1969-70 & 1971-72

Items	1967-68	1968-69	1969-70	1971-72
A. Farm Investment.				
1. Purchase & improvement of land.	915.72 (22.47)	1018.33 (29.59)	1458.33 (37.09)	2186.30 (28.73)
2. Purchase & construction of irrigation structure.	601.60 (14.76)	229.89 (6.68)	533.54 (13.57)	786.67 (10.34)
3. Construction of farm buildings.	211.61 (5.19)	349.63 (10.16)	63.98 (1.63)	572.75 (7.53)
4. Purchase of minor implements.	133.20 (3.27)	149.63 (4.35)	35.45 (0.90)	77.23 (1.01)
5. Purchase of farm machinery & major implements.	1715.07 (42.08)	1222.94 (35.54)	880.55 (22.39)	1797.00 (23.61)
6. Purchase of draught animals.	116.50 (2.86)	38.73 (1.13)	277.50 (7.06)	236.67 (3.11)
7. Purchase of milch animals.	129.00 (3.17)	166100 (4.82)	443.33 (11.28)	525.83 (6.91)
8. Purchase of other animals.	123.87 (3.04)	112.20 (3.26)	105.00 (2.67)	40.00 (0.53)
Sub Total (A)	3946.57 (96.84)	3287.35 (95.53)	3797.68 (96.59)	6222.45 (81.77)
B. Household Investment				
1. Investment in education.	128.94 (3.16)	154.00 (4.47)	134.21 (3.41)	587.50 (7.72)
Sub Total(B)	128.94 (3.16)	154.00 (4.47)	134.21 (3.41)	587.50 (7.72)
C. Non-farm Investment.				
1. Investment in transport	-	-	-	200.00 (10.51)
Sub Total(C)	-	-	-	800.00 (10.51)
Grand Total(A+B+C)	4075.51 (100.00)	3441.35 (100.00)	3931.89 (100.00)	7609.95 (100.00)

Note:- Figures in the parentheses denote percentages to Grand total.

upon the introduction of high-yielding varieties. Average farm investment amounted to Rs 6222.45, which formed 81.77 per cent of total investment in 1971-72. It was estimated at Rs 3946.57, 3287.35 and 3797.68 from 1967-68 through 1969-70 and accounted for 96.84, 95.53 and 96.59 per cent of total investment during the corresponding period. A decline in the proportion of average farm investment to total investment in 1971-72 resulted mostly from growing importance of non-farm and household investment, as compared to the previous years.

The investment in farm machinery and major implements received the first place in 1967-68 and 1968-69 and formed 42.08 and 35.54 per cent of total investment. This component enjoyed the second place in 1969-70 and 1971-72 and occupied 22.39 and 23.61 per cent of the total investment. It indicated the keen desire of cultivating families to mechanize their farms, to be able to increase production per unit area and per unit time. The investment in land consistently increased from Rs 915.72 in 1967-68 to Rs 1018.33, 1458.33 and 2186.30 in 1968-69, 1969-70 and 1971-72 respectively. This component of investment was placed first in 1969-70 and 1971-72 and second in 1967-68 and 1968-69. It contributed 28.73 per cent of the total investment in 1971-72 ag against 22.47, 29.59 and 37.09 per cent from 1967-68 through 1969-70. The higher magnitude of investment in the purchase and improvement of land every year, might be due to the appreciation in land values, following the introduction of the high-yielding varieties.

The investment in the purchase and construction of irrigation structure amounted to Rs 601.60, 229.89, 533.54 and 786.67 for 1967-68, 1968-69, 1969-70 and 1971-72 respectively. It contributed 14.76, 6.58 13.57 and 10.34 per cent of the total investment during the corresponding

period. This component occupied a position only next to investment in land and farm machinery in 1967-68, 1969-70 and 1971-72. It highlighted the importance of investment in irrigation structure in the recent years. The investment in the construction of farm buildings increased from Rs 211.61 in 1967-68 to 572.75 in 1971-72. The percentage investment in this component to total investment increased from 5.19 to 7.53 during the corresponding period. Next in importance was investment in the purchase of milch animals, which accounted for 3.17, 4.82, 11.28 and 6.91 per cent of the total investment in 1967-68, 1968-69, 1969-70 and 1971-72 respectively. It exceeded the investment in the purchase of draught animals for all the years under study and confirmed the trend of cultivating families adopting dairying for supplementing their farm incomes. The lower magnitude of investment in draught animals resulted from comparatively higher investment in farm machinery, which led to the partial replacement of bullock labour.

Farm investment per hectare increased from Rs 342.19 in 1967-68 to Rs 361.51 and 526.76 in 1969-70 and 1971-72 respectively(Table 9.3). The percentage increase over 1967-68 came to 0.56 and 53.93 during the corresponding period. The decrease in farm investment per hectare in 1968-69, as compared to 1967-68, was owing to the decrease in the magnitude of investment in irrigation structure and farm machinery.

An examination of the magnitude of different items of farm investment per hectare showed that investment in the purchase and improvement of land increased from Rs 79.40 in 1967-68 to 94.71, 138.82 and 185.08 in the subsequent years. Investment in farm machinery also witnessed an increase from Rs 148.71 in 1967-68 to Rs 152.12 in 1971-72. Investment in irrigation structure per hectare increased from Rs 52.16 to 66.60 during the corresponding period. The percentage of investment

Table 9.3

Farm, household and non-farm investment per hectare 1967-68, 1968-69, 1969-70 and 1971-72.

Items	1967-68	1968-69	1969-70	1971-72
A. Farm Investment				
1. Purchase and improvement of land.	79.40	94.71	138.82	185.08
2. Purchase & Construction of irrigation structure.	52.16	21.38	50.79	66.60
3. Construction of farm buildings.	18.35	32.51	6.09	48.49
4. Purchase of minor implements.	11.55	13.92	3.37	6.54
5. Purchase of farm machinery & major implements.	148.71	113.73	83.82	152.12
6. Purchase of draught animals.	10.10	3.60	26.43	20.03
7. Purchase of milch animals.	11.18	15.44	42.20	44.51
8. Purchase of other animals.	10.74	10.43	9.99	3.39
Sub Total(A)	342.19	305.72	361.51	526.76
B. Household Investment				
1. Investment in education.	11.17	14.32	12.78	49.73
Sub Total (B)	11.17	14.32	12.78	49.73
C. Non-farm Investment				
1. Investment in transport	-	-	-	67.72
Sub Total (C)	-	-	-	67.72
Grand Total (A+ B+C)	353.36	320.04	374.29	644.21

in these three components(land, farm machinery and irrigation structure) to farm investment per hectare came to 81.90, 75.17, 75.64 and 76.66 for 1967-68, 1968-69, 1969-70 and 1971-72 respectively.

The magnitude of investment in farm machinery and irrigation structure was estimated at Rs 200.87 in 1967-68 and 135.11, 134.61 and 218.72 in the subsequent years. It constituted 58.70, 44.19, 37.24 and 41.52 per cent of per hectare farm investment in 1967-68, 1968-69, 1969-70 and 1971-72 respectively and highlighted the importance of investment in farm machinery and irrigation structure subsequent to the introduction of high-yielding varieties.

Household investment

It was hypothesized that the investment in education would increase with increased incomes, resulting from the introduction of high-yielding varieties. The investment in education per household increased from Rs 128.94 in 1967-68 to Rs 154.00, 134.21 and 587.50 in the subsequent years(Table 9.2). The percentage of investment in education to total investment stood at 7.72 in 1971-72 as compared to 3.16, 4.47 and 3.41 per cent from 1967-68 through 1969-70. It gave an indication that cultivating families have started giving more importance to the education of their children than they did before.

To study the response of investment in education as a result of change in farm business income, linear regression was fitted to the data for all the years, where Y represented per household investment in education and X per household farm business income(Table 9.4).

Table 9.4

Regression coefficients and their significance, 1967-68, 1968-69, 1969-70 and 1971-72.

Items	1967-68	1968-69	1969-70	1971-72
Value of 'b'	.0005 (.0271)	.0011 (.0040)	.0063** (.0020)	.0662** (.0192)
Elasticity	.0431	.0649	.5506	1.5282
R^2	.0019	.0036	.2871**	.3812**
Y = a+bX	167.63+.0005X	171.78+.0011X	72.37+.0063X	423.14+.0662X

The income elasticity of education increased from .0431 in 1967-68 to .0649, .5506 and 1.5282 in 1968-69, 1969-70 and 1971-72 respectively. The increasing elasticities indicated the higher relative response of investment in education as a result of shifts in farm business income.

Non-farm investment

Non-farm investment showed up for the first time in 1971-72. The magnitude of this investment amounted to Rs 800.00, which contributed 10.51 per cent of total investment in 1971-72(Table 9.2). It was of the nature of investment in transport business and indicated the business attitude of farmers to make some investment outside agriculture. It was a pointer in the direction that with increased incomes in the coming years, the farmers might invest higher amounts in non-farm sector of the economy.

Investment pattern and farm size

It was hypothesized that the pattern of investment would differ on different sizes of operational holdings. Total investment per holding increased from Rs 2075.17 in 1967-68 to Rs 3988.92 in 1971-72

for small holdings, which accounted for 92.22 per cent increase during the corresponding period(Table 9.5). The decrease in investment in 1968-69 as compared to 1967-68, was owing to the lower magnitude of investment in land. Total investment increased from Rs 4680.02 in 1967-68 to Rs 4793.11 in 1971-72 for medium holdings, which gave 2.42 per cent increase during the corresponding period. The lower magnitude of investment in 1968-69 and 1969-70, as compared to 1967-68 could be attributed to the lower investment in land, irrigation structure and farm machinery in 1968-69 and 1969-70. Total investment consistently increased from Rs 4691.03 in 1967-68 to 7233.24, 7331.70 and 12914.05 in 1968-69, 1969-70 and 1971-72 respectively for the large holdings. Percentage increase in investment over 1967-68 was 54.19, 56.19 and 175.29 during the corresponding period.

Farm investment accounted for 98.26 per cent of total investment for small holdings and 96.29 and 97.19 per cent for medium and large holdings respectively in 1967-68. The relative share of farm investment declined to 67.05, 66.28 and 91.04 per cent for the different sized holdings in 1971-72. This was owing to the higher amount of household and non-farm investment in 1971-72.

An examination of the magnitude and relative importance of various components of farm investment showed that the purchase and construction of irrigation structure occupied the first place in 1968-69, 1969-70 and 1971-72 and second place in 1967-68 for small holdings. It contributed 30.84, 30.68, 51.72 and 22.98 per cent of total investment during all the years under study. The investment in land enjoyed the first place in 1967-68. But its importance decreased in the subsequent years. This was due to the steep rise in land values in the recent years, which made it difficult for the small farmers to purchase land. Investment

Table 9.5

Average farm, household and non-farm Investment for different sized holdings, 1967-68, 1968-69, 1969-70 and 1971-72.

Items	1967-68			1968-69			1969-70			1971-72		
A. Farm Investment	Small	Medium	Large	Small	Medium	Large	Small	Medium	Large	Small	Medium	Large
1. Purchase and improvement of land.	704.85 (33.97)	1002.27 (21.42)	945.11 (20.15)	292.86 (17.94)	250.00 (13.10)	2777.78 (38.40)	- -	250.00 (10.59)	4100.00 (55.92)	- -	884.62 (18.46)	4917.19 (38.08)
2. Purchase and Construction of irrigation structure	640.00 (30.84)	616.29 (13.17)	548.89 (11.70)	500.83 (30.68)	127.20 (6.67)	178.89 (2.47)	1072.89 (51.72)	31.82 (1.35)	600.00 (8.18)	916.66 (22.98)	138.46 (2.89)	1481.82 (11.47)
3. Construction of farm buildings.	136.78 (6.59)	294.79 (6.30)	140.44 (2.99)	312.94 (19.17)	297.14 (15.57)	459.80 (6.36)	- -	27.27 (1.16)	161.95 (2.21)	504.17 (12.64)	181.35 (3.78)	1072.73 (8.31)
4. Purchase of minor implements.	87.78 (4.23)	133.98 (2.97)	159.53 (3.40)	94.14 (5.77)	147.79 (7.74)	195.67 (2.71)	5.61 (0.27)	37.09 (1.57)	60.50 (0.84)	45.58 (1.14)	72.16 (1.51)	100.50 (0.78)
5. Purchase of farm Machinery & major implements.	93.86 (4.52)	2000.83 (42.75)	2531.50 (53.96)	100.00 (6.14)	593.40 (31.10)	3075.61 (42.52)	267.45 (12.89)	695.41 (29.45)	1636.00 (22.31)	466.67 (11.70)	1061.92 (22.15)	3391.36 (26.26)
6. Purchase of draught animals.	34.29 (1.65)	216.36 (4.32)	25.11 (0.54)	43.71 (2.68)	39.71 (2.08)	33.33 (0.46)	155.56 (7.50)	400.00 (16.94)	252.50 (3.44)	141.67 (3.55)	265.38 (5.54)	254.55 (1.97)
7. Purchase of milch animals.	242.15 (11.67)	103.43 (2.21)	80.78 (1.72)	175.00 (10.72)	166.43 (8.72)	158.33 (2.19)	444.44 (21.42)	654.55 (27.72)	210.00 (2.86)	600.00 (15.04)	496.15 (10.35)	520.45 (4.03)
8. Purchase of other animals	99.28 (4.79)	133.50 (2.85)	128.00 (2.73)	67.15 (4.11)	108.43 (5.68)	153.11 (2.12)	88.89 (4.29)	109.09 (4.62)	115.00 (1.57)	- -	76.92 (1.60)	18.18 (0.14)
Sub Total (A)	2038.99 (98.26)	4503.45 (96.29)	4559.36 (97.19)	1586.63 (97.21)	1730.10 (90.66)	7032.52 (97.23)	2034.84 (98.09)	2205.23 (93.40)	7135.95 (97.33)	2674.75 (67.05)	3176.96 (66.28)	11756.78 (91.04)

Contd/-

Table 9.5 (Contd.)

Average farm, household and non-farm Investment for different sized holdings, 1967-68, 1968-69, 1969-70 & 1971-72.

Items	1967-68			1968-69			1969-70			1971-72		
	Small	Medium	Large	Small	Medium	Large	Small	Medium	Large	Small	Medium	Large
B. Household Investment												
1. Investment in education.	36.18 (1.74)	173.57 (3.71)	131.37 (2.81)	45.61 (2.79)	178.16 (9.34)	200.72 (2.77)	39.53 (1.91)	155.73 (6.60)	195.75 (2.67)	64.17 (1.61)	346.92 (7.24)	1157.27 (8.96)
Sub Total (B)	36.18 (1.74)	173.57 (3.71)	131.67 (2.81)	45.61 (2.79)	178.16 (9.34)	200.72 (2.77)	39.51 (1.91)	155.73 (6.60)	195.75 (2.67)	64.17 (1.61)	346.92 (7.24)	1157.27 (8.96)
C. Non-farm Investment												
1. Investment in transport	-	-	-	-	-	-	-	-	125[illegible] (3[illegible])	1250.00 (31.34)	1269.23 (26.48)	-
Sub Total (C)	-	-	-	-	-	-	-	-	1[illegible]	1250.00 (31.34)	1269.23 (26.48)	-
Grand Total (A+B+C)	2075.17 (100.00)	4680.02 (100.00)	4691.03 (100.00)	1632.24 (100.00)	1908.26 (100.00)	7283.24 (100.00)	2074.37 (100.00)	2360.96 (100.00)	7331.70 (100.00)	3988.92 (100.00)	4793.11 (100.00)	12914.05 (100.00)

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Note:- The figures in the parentheses denote percentages to grand total.

in the purchase of milch animals gained the second position in 1969-70 and 1971-72, which formed 21.42 and 15.04 per cent of total investment. This showed the tendency of small farmers to invest in dairying for supplementing their farm incomes. The magnitude of investment in farm machinery also increased from Rs 93.86 in 1967-68 to Rs 100.00, 267.45 and 466.67 in the subsequent years for small holdings. This component hold the third place in 1969-70 and fourth in 1971-72.

The investment in farm machinery and major implements occupied the first place in all the years under study for medium holdings. It constituted 42.75, 31.10, 29.45 and 22.15 per centof total investment during the corresponding period. Next in importance was investment in land in 1967-68 and 1971-72 and investment in milch animals in 1969-70. Other components of farm investment experienced year to year variations in their relative importance for medium holdings.

The investment in the purchase and improvement of land got the first place in 1969-70 and 1971-72 for large holdings. This component occupied the second position in the previous years, thereby yielding first place to investment in farm machinery. The investment in land amounted to Rs 945.11, 2777.78, 4100.00 and 4917.19 in 1967-68, 1968-69, 1969-70 and 1971-72 respectively, which accounted for 20.15, 38.40, 55.92 and 38.08 per cent of the total investment during the corresponding period. The percentage of investment in farm machinery to total investment worked out to be 53.96, 42.52, 22.31 and 26.26 for all the years under study. Next in importance was investment in the purchase and construction of irrigation structure in 1967-68, 1969-70 and 1971-72 which formed 11.70, 8.18 and 11.47 per cent of the total investment during the corresponding period. The investment in these three components(land, farm machinery and irrigation structure) accounted for 85.81, 83.39, 86.41 and 75.81 per cent

of total investment in 1967-68, 1968-69, 1969-70 and 1971-72 respectively for large holdings. Thus large holdings followed a well defined farm investment pattern in the recent years.

Farm investment per hectare increased from Rs 502.74 in 1967-68 to Rs 689.96 in 1971-72 for small holding(Table 9.6). It amounted to Rs 440.12, 182.56, 265.12 and 371.50 in 1967-68, 1968-69, 1969-70 and 1971-72 respectively for medium holdings. The decrease in investment as compared to 1967-68, came from the lower investment in irrigation structure and farm machinery in the subsequent years. Per hectare farm investment increased from Rs 235.48 in 1967-68 to 388.13, 382.01 and 587.97 in the following years. The percentage increase in investment over 1967-68 came out to be 64.83, 62.23 and 149.69 during the corresponding period.

The investment in irrigation structure per hectare increased from Rs 157.80 in 1967-68 to Rs 262.04 and 236.46 in 1969-70 and 1971-72 respectively for small holdings. The investment in the purchase of milch animals increased from Rs 59.70 in 1967-68 to Rs 108.55 and 154.77 during the corresponding period. Again, investment in farm machinery increased from Rs 23.14 in 1967-68 to Rs 26.09, 65.32 and 120.38 during the subsequent years. Investment per hectare in these three components (irrigation structure, milch animals and farm machinery) constituted 47.87, 48.90, 87.71 and 74.15 per cent of total farm investment per hectare in the years under study.

Investment in farm machinery and major implements per hectare amounted to Rs 195.41, 62.62, 83.60 and 124.18 in 1967-68, 1968-69, 1969-70 and 1971-72 respectively for medium holdings. The purchase and improvement of land amounted to Rs 97.88, 26.38, 30.06 and 103.44 during the corresponding

Table 9.6

Farm, household and non-farm investment per hectare for different sized holdings, 1967-68, 1968-69, 1969-70 and 1971-72.

Items	1967-68			1968-69			1969-70			1971-72		
A. Farm Investment	Small	Medium	Large	Small	Medium	Large	Small	Medium	Large	Small	Medium	Large
1. Purchase & improvement of land	173.79	97.88	48.81	76.38	26.38	153.30	--	30.06	219.49	-	103.44	245.91
2. Purchase and construction of irrigation structure.	157.80	60.19	28.35	130.61	13.42	9.87	262.04	3.82	32.12	236.46	16.19	74.10
3. Construction of farm buildings.	33.73	28.79	7.25	81.62	31.35	25.38	-	3.28	8.67	130.05	21.21	53.65
4. Purchase of minor implements.	21.65	13.57	8.24	24.55	15.59	10.80	1.37	4.46	3.24	11.76	8.43	5.03
5. Purchase of farm machinery and major implements.	23.14	195.41	130.74	26.09	62.62	169.75	65.32	83.60	87.58	120.38	124.18	169.61
6. Purchase of draught animals.	8.45	21.13	1.30	11.41	4.19	1.84	37.99	48.09	13.52	36.54	31.03	12.73
7. Purchase of milch animals.	59.70	10.10	4.17	45.64	17.56	8.74	108.55	78.69	11.24	154.77	58.02	26.03
8. Purchase of other animals.	24.48	13.05	6.62	17.51	11.45	8.45	21.71	13.12	6.15	-	9.00	0.91
Sub Total (A)	502.74	440.12	235.48	413.81	182.56	388.13	496.98	265.12	382.01	689.96	371.50	587.97
B. Household Investment.												
1. Investment in education.	8.93	16.95	6.80	11.89	18.80	11.08	9.66	18.72	10.48	16.55	40.58	57.87
Sub Total (B)	8.93	16.95	6.80	11.89	18.80	11.08	9.66	18.72	10.48	16.55	40.58	57.87
C. Non-farm Investment												
1. Investment in transport	-	-	-	-	-	-	-	-	-	322.44	148.42	-
Sub Total (C)	-	-	-	-	-	-	-	-	-	322.44	148.42	-
Grand Total (A+B+C)	511.67	457.05	242.28	425.70	201.36	399.21	506.64	283.84	392.49	1028.95	560.50	645.84

period. These two components(land and farm machinery) accounted for 66.64, 48.75, 42.87 and 61.27 per cent of the total farm investment per hectare in all the years under study.

In case of large holdings, the investment in farm machinery per hectare increased from Rs 130.74 in 1967-68 to Rs 169.61 in 1971-72. Investment in land increased from Rs 48.81 in 1967-68 to Rs 153.30, 219.49 and 245.91 in 1968-69, 1969-70 and 1971-72 respectively. The investment in these two items contributed 76.25 per cent of total farm investment per hectare in 1967-68 and 83.23, 80.38 and 70.67 per cent in the subsequent years.

Household investment

The per household investment in education consistently increased from Rs 36.18, 173.57 and 131.67 in 1967-68 to 64.17, 346.92 and 1157.27 in 1971-72 for small, medium and large holdings respectively. The percent increase, in 1971-72 over 1967-68, worked out to be 77.36, 99.87 and 778.92 per cent for small, medium and large holdings respectively. The percentage of investment in education to total investment increased from 2.81 in 1967-68 to 8.96 in 1971-72 for large holdings. It accounted for 1.74 and 3.71 per cent in 1967-68 and 1.61 and 7.24 per cent in 1971-72 for small and medium holdings respectively. The magnitude of investment and its relative increase in case of large holdings was higher than that of the small and medium holdings. Thus large holdings spent more on education of their children in the recent years.

Non-farm investment : The small and medium holdings invested in transport business for the first time in 1971-72. The investment in transport amounted to Rs 1250.00 and 1269.23 for small and medium holdings respectively, which formed 31.34 and 26.48 per cent of total investment. It showed the

tendency of small and medium holdings to invest outside agriculture for supplementing their farm incomes.

Concentration of investment : The frequency distribution of holdings according to total investment is shown in Table 9.7. The percentage of holdings, which made an investment of Rs 7200 & above, increased from 16.66 in 1967-68 to 23.33 in 1971-72. On the other hand, the percentage of holdings, which made an investment of less than Rs 1200, declined from 30.00 to 10.00 during the corresponding period. The proportion of holdings, which invested Rs 4800 & above increased from 23.33 in 1967-68 to 36.66 in 1971-72. And the proportion of holdings, which invested less than Rs 2400, decreased from 60.00 to 36.67 during the corresponding period.

As regards farm investment, the percentage of holdings, which made an investment of Rs 6000 & above, increased from 16.67 in 1967-68 to 20.00 in 1971-72(Table 9.8). On the other hand, the proportion of holdings, which invested less than Rs 2400 declined from 60.00 to 40.00 during the corresponding period.

Financial investment : The per holding financial investment for different sized holdings is presented in Table 9.9. The average amount of financial investment came to Rs 107.39 in 1971-72. The instalment of the life insurance occupied the first place, and accounted for 32.59 per cent of the total financial investment in 1971-72. The investment in the purchase of shares from the land mortgage banks was placed second and accounted for 29.65 per cent of the total financial investment.

Table 9.9 shows that the small holdings did not invest in any constituent of the financial investment in 1971-72. The per holding investment increased from Rs 85.76 for medium holdings to Rs 191.54 for large holdings. The investment in the purchase of shares from the

Table 9.7

Frequency distribution of holdings by total investment Classes, 1967-68, 1968-69, 1969-70 and 1971-72.

Total Investment (Rs)	1967-68			1968-69			1969-70			1971-72		
	Percentage of holdings.	Cumulative Percentage.	Investment per holding.	Percentage of holdings.	Cumulative Percentage.	Investment Per holdings.	Percentage of holdings.	Cumulative percentage.	Investment per holding.	Percentage of holdings.	Cumulative Percentage.	Investment per holding.
0-1200	30.00	30.00	652.78	46.67	46.67	497.56	26.67	26.67	346.75	10.00	10.00	478.50
1200-2400	30.00	60.00	1852.73	23.33	70.00	1805.06	30.00	56.67	1835.00	26.67	36.67	1507.75
2400-3600	6.67	66.67	3035.80	13.33	83.33	2672.57	20.00	76.67	2674.57	20.00	56.67	3066.42
3600-4800	10.00	76.67	3950.50	3.33	86.66	4130.00	-	76.67	-	6.67	63.34	3634.00
4800-6000	6.67	83.34	5303.50	-	86.66	-	13.33	90.00	5320.37	10.00	73.34	5220.67
6000-7200	-	83.34	-	6.67	93.33	6648.00	-	90.00	-	3.33	76.67	7045.00
7200 & above	16.66	100.00	14241.15	6.67	100.00	27748.25	10.00	100.00	20447.77	23.33	100.00	23779.05
Overall	100.00	-	4075.51	100.00	-	3441.35	100.00	-	3931.89	100.00	-	7609.95

Table 9.8

Frequency distribution of holdings by farm investment classes, 1967-68, 1968-69, 1969-70 and 1971-72.

Farm Investment (Rs)	1967-68			1968-69			1969-70			1971-72		
	Percentage of holdings	Cumulative percentage	Average farm investment	Percentage of holdings	Cumulative percentage	Average farm investment	Percentage of holdings	Cumulative percentage	Average farm investment	Percentage of holdings	Cumulative percentage	Average farm investment
up 1200	33.33	33.33	594.13	50.00	50.00	442.85	30.00	30.00	351.22	13.33	13.33	629.25
1200-2400	26.67	60.00	1814.34	26.66	76.66	1904.80	33.34	63.34	1838.80	26.67	40.00	1466.94
2400-3600	10.00	70.00	3019.87	6.67	83.33	2742.40	13.33	76.67	2712.87	26.67	66.67	2359.12
3600-4800	10.00	80.00	4258.00	3.33	86.66	3937.00	3.33	80.00	4562.00	6.66	73.33	4204.00
4800-6000	3.34	83.34	5716.50	-	86.66	-	10.00	90.00	5372.67	6.67	80.00	5167.00
6000-7200	3.33	86.67	6966.00	6.67	93.33	6368.00	-	90.00	-	10.00	90.00	6648.00
7200 & above.	13.33	100.00	15858.67	6.67	100.00	27276.50	10.00	100.00	20284.53	10.00	100.00	36953.90
Overall	100.00	-	3946.57	100.00	-	3287.35	100.00	-	3797.68	100.00	-	6222.45

Table 9.9

Pattern of financial investment (per holding) of different sized holdings, 1971-72

(in Rs.)

Items	Small	Medium	Large	Average
Shares in co-operative society	-	-	37.91 (19.79)	13.90 (12.94)
Shares in marketing society	-	7.69 (8.97)	-	3.33 (3.10)
Shares in Land Mortgage Bank	-	24.23 (28.25)	58.18 (30.38)	31.83 (29.65)
Purchase of National Saving Certificates	-	15.38 (17.93)	45.45 (23.73)	23.33 (21.72)
L .I.C. Instalment	-	38.46 (44.85)	50.00 (26.10)	35.00 (32.59)
Total:-	-	85.76 (100.00)	191.54 (100.00)	107.39 (100.00)

land mortgage banks occupied the first place in the total financial investment for large holdings and the second place for medium holdings. It amounted to Rs 24.23 and 58.18 which formed 28.25 and 30.38 per cent of the total financial investment for medium and large holdings respectively. This investment served as the pre-requisite for borrowings from these banks. The investment in the payment of instalment of the life insurance accounted for 44.85 and 26.10 per cent of the total financial investment for medium and large holdings respectively. It indicated the awareness among these households to invest in this component. The purchase of National Saving Certificates worked out to be Rs 15.38 and 45.45, which accounted for 17.93 and 23.73 per cent of the total financial investment for medium and large holdings respectively. This investment was mainly associated with the purchase of land. The medium holdings also invested in the purchase of shares from the marketing societies.

Functional relationship between farm income and investment

To study the response of gross income per hectare, as a result of change in farm investment per hectare, linear regression was fitted to the data for all the years, where Y represented per hectare gross income and X per hectare farm investment.

Table 9.10

Regression coefficients and their significance, 1967-68, 1968-69, 1969-70 and 1971-72

Items	1967-68	1968-69	1969-70	1971-72
Value of b	.1468 (.0932)	1.1482* (.4605)	.5172 (.2593)	1.1656** (.3059)
Elasticity	.0320	.1638	.0956	.2035
R^2	.0525	.1920*	.1130	.2239**
Y = a+bX	1881.83+.1468X	1602.17+1.1482X	2263.62+.5172X	2211.27+1.1656X

The coefficient of determination(R^2) was significant in 1968-69 and 1971-72. The investment elasticities increased from .0520 in 1967-68 to .1638, .0956 and .2035 in 1968-69, 1969-70 and 1971-72 respectively.

Other factors and investment : The contribution of such factors as type of ownership, size of family, number of earners and education of the head of the family, was examined by applying variance-ratio test, for their influence on the levels of both total investment and farm investment for all the years under study. The results are presented in Tables 9.11 and 9.12. The analysis showed that the effect of educational level of the head of the family was significant both in case of total investment and farm investment in 1967-68. The size of family also influenced farm investment in 1971-72.

Educational level and investment : Total investment increased from Rs 2761.81 in case of functionally illiterate heads to Rs 13325.33 in case of heads with matriculation qualifications. F value came out to be 2.9891, which was significant at 5 per cent level. Farm investment was estimated at Rs 2422.69 in case of illiterate heads and Rs 12813.67 in case of matriculate heads. The calculated 'F' value(3.0234) was significant at 5 per cent level.

Size of family and investment : Farm investment increased from Rs 436.75 for families upto three members to Rs 8347.82 for families with 10 and above members in 1971-72. The logic behind it was that the large families invested higher amount in farm investment to obtain higher incomes. This, in turn, would help to finance higher family expenditure. 'F' value worked out to be 3.4695, which was also significant at 5 per cent level.

Table 9.11

Total Investment per holding and 'F' Values for Various Characteristics, 1967-68, 1968-69, 1969-70 & 1971-72.

Characteristics	1967-68			1968-69			1969-70			1971-72		
	Total Investment.	d.f.	'F' Value	Total Investment	d.f.	'F' Value	Total Investment.	d.f.	'F' Value	Total Investment.	d.f.	'F' Value
a. Type of Ownership												
Owners	3211.61	1;28	1.2294	5104.02	1;28	2.1076	4677.61	1;28	.6680	10794.43	1;28	1.6529
Part-Owners	5803.35			1541.16			2191.88			4823.53		
b. No. of family members												
1-3	1148.00			-			5518.00			494.75		
4-6	6720.60	3;26	.5283	949.32	2;27	.5155	1602.13	3;26	1.1190	2759.83	3;26	.4773
7-9	3178.25			3754.79			2369.08			6391.17		
10 & above	3947.68			4497.75			7654.64			9509.61		
c. No. of Earners.												
1	6546.20			4667.65			3565.24			-		
2	1925.14	4;25	.5679	1316.80	4;25	1.2103	1609.00	4;25	.3676	5621.85	3;26	.9694
3	3246.44			7081.51			4991.17			7185.50		
4	4534.71			1387.45			3992.00			13048.60		
5 & above	1922.00			940.00			10293.80			5358.67		
d. Educational level of head												
Illiterate	2761.81		*	2512.58			4611.27			7993.89		
Primary	2124.63	3;26	2.9891	676.00	3;26	.7409	2645.50	3;26	.1321	4361.50	3;26	.2874
Middle	4761.00			6937.32			2532.42			10201.42		
Matric & above	13325.33			4175.17			3285.67			2161.00		

* Significant at 5 percent level.

Table 9.12

Average farm investment and 'F' Values for Various Characteristics, 1967-68, 1968-69, 1969-70 & 1971-72.

Characteristics	1967-68			1968-69			1969-70			1971-72		
	Average farm investment	d.f.	'F' value	Average farm investment	d.f.	'F' value	Average farm investment	d.f.	'F' Value	Average farm investment	d.f.	'F' Value
a. Type of Ownership												
Owners	3087.08	1;23	1.3661	4932.52	1;28	2.1170	4514.67	1;28	.6241	9224.79	1;28	1.0597
Part-owner	5665.58			1407.16			2123.61			3595.41		
b. No. of family members.												
1-3	1148.00						5518.00			436.75		
4-6	6625.52	3;23	.5402	855.65	2;27	.4964	1523.00	3;23	1.1020	2753.[illegible]	3;23	3.4695*
7-9	3041.08			3623.83			2234.70			2955.41		
10 & above	3796.23			4275.50			7455.22			8347.82		
c. No. of earners												
1	6488.64			4507.65			3470.06			-		
2.	1697.15	4;25	.5956	1217.55	4;25	1.1837	1525.00	4;25	.3605	3209.25	3;26	1.0291
3	3158.36			6846.86			4784.75			2956.87		
4	4293.04			1129.95			3000.00			11812.20		
5 & above.	1909.50			915.50			10262.00			3755.33		
d. Educational Level of the head												
Illiterate	2633.22			2356.98			4522.42			6443.97		
Primary	2037.13	3;26	3.0234*	566.50	3;26	.7955	2500.00	3;26	.1520	4181.50	3;26	.1542
Middle	4641.83			6798.23			2263.53			8035.42		
Matric & above.	12147.00			3971.83			3141.53			2154.53		

* Significant at 5 percent level

Investment pattern of the labour households : The investment pattern of the labour households is presented in Table 9.13.

Table 9.13

Investment pattern of the labour households
1971-72

(in Rs)

Items	Gill	Bhinder Kalan	Faqarsar	Overall average
1. Purchase of milch animals	-	33.33 (69.44)	63.47 (65.12)	32.27 (64.77)
2. Purchase of other animals	-	-	10.00 (10.26)	3.33 (6.69)
3. Investment in education	4.00 (100.00)	14.67 (30.56)	24.00 (24.62)	14.22 (28.54)
Total	4.00 (100.00)	48.00 (100.00)	97.47 (100.00)	49.82 (100.00)

The per household total investment of the labour households worked out to be Rs 49.82 in 1971-72. It was the highest(Rs 97.47) in Faqarsar and the lowest in Gill(Rs 4.00). The investment in the purchase of milch animals accounted for 64.77 per cent of the total investment. It constituted 69.44 and 65.12 per cent of total investment in Bhinder Kalan and Faqarsar respectively. The investment in education amounted to Rs 14.22, which accounted for 28.54 per cent of the total investment in 1971-72. It increased from Rs 4.00 in Gill to Rs 14.67 and 24.00 in Bhinder Kalan and Faqarsar respectively. The investment in this component was higher(Rs 587.50) in case of cultivating households in 1971-72. It worked out to be Rs 64.17, 346.92 and 1157.27 for small, medium and large holdings respectively. Thus the labour households gave relatively lesser attention to the education of their children.

The study showed that the labour households did not invest in any item of financial investment during 1971-72. This might be due to their meagre income, which barely covered the household expenditure.

CHAPTER X

HOUSEHOLD EXPENDITURE

Proper utilization of the increased farm incomes was essential for further expansion of the agricultural plant. If these increased incomes were spent on household expenditure, without building up the necessary infrastructure on the farm, economic development of agriculture might be hampered, at least over a longer period. On the other hand, if the increased incomes were invested on the farm, the agricultural economy could support secondary and tertiary sectors with its increased production and farm incomes. The study of household expenditure was, therefore, important to examine the spending behaviour of the selected households in response to increased incomes and to work out the magnitude and relative importance of various items, which entered household expenditure.

Components of household expenditure

Household expenditure comprised all the expenditure incurred by the households on domestic account, including consumption of the produce raised on the farm(in case of cultivating households). This expenditure was divided into food and non-food items. Food items included cereals, milk and milk products, vegetables and pulses, sugar, gur & tea, salt & spices, fruits and edible oils etc. Non-food items included clothing & footwear, fuel, lighting, medicine, travelling, socio-religious ceremonies, recreation, toilet, consumer durable goods and expenditure on the purchase and construction of dwelling houses.

Gross income and household expenditure

Average household expenditure along with its proportion to gross income for various years is presented in Table 10.1.

Table 10.1

Gross income and household expenditure, 1968-69, 1969-70 and 1971-72

Year	Average gross income(Rs)	Average household expenditure(Rs)	Proportion of household expenditure to gross income
1968-69	20938.60	9044.31	43.19
1969-70	26556.41	9170.56	34.53
1971-72	35105.60	12190.41	34.72

It was hypothesized that average household expenditure increased in response to the increased incomes in the recent years. Average household expenditure increased from Rs 9044.31 in 1968-69 to Rs 9170.56 and Rs 12190.41 in 1969-70 and 1971-72 respectively, accounting for 43.19, 34.53 and 34.72 per cent of average gross income during the corresponding period. The higher proportion of household expenditure to gross income in 1968-69, as compared to 1969-70 and 1971-72, resulted from the lower magnitude of gross income, which was affected adversely by unfavourable weather conditions. The percentage increase in household expenditure over 1968-69 worked out to be 1.40 and 34.79 in 1969-70 and 1971-72 respectively.

The magnitude and relative importance of various components of household expenditure for different years is presented in Table 10.2. It was hypothesized that the relative importance of expenditure on non-food items would increase as a result of the operation of the demonstration effect. The study showed that the per household expenditure on food items increased from Rs 5666.79 in 1968-69 to Rs 6529.23 in 1971-72. Its contribution to the total expenditure, however, decreased from 62.66 per cent in 1968-69 to 56.14 and 53.56 per cent in 1969-70 and 1971-72 respectively. The lower proportion of expenditure on food items to total household expenditure in 1971-72 was in conformity with the Engel's Law that the proportion of expenditure on food decreased as income increased.

The per household expenditure on non-food items increased from Rs 3377.52 in 1968-69 to Rs 4021.68 and Rs 5661.18 in 1969-70 and 1971-72 respectively. The percentage expenditure on non-food items to total expenditure increased from 37.34 per cent in 1968-69 to 43.86 and 46.44 during the corresponding period. The percentage increase in this expenditure over 1968-69 worked out to be 19.07 and 67.61 in the subsequent years, which shows a rising trend of expenditure on non-food items.

The expenditure on socio-religious ceremonies occupied the first place in non-food items for all the years under reference. The magnitude of expenditure on this component increased from Rs 1029.44 in 1968-69 to Rs 1191.58 and 1581.83 in 1969-70 and 1971-72 respectively. Its share in the total expenditure increased from 11.38 per cent in 1968-69 to 12.99 and 12.98 per cent during the corresponding period. The percentage increase in expenditure on socio-religious ceremonies

Table 10.2

Average and per capita household expenditure, 1968-69, 1969-70 and 1971-72
(in Rs.)

Items	Expenditure per household			Expenditure per capita		
	1968-69	1969-70	1971-72	1968-69	1969-70	1971-72
A. Food Items						
1. Cereals.	2126.27 (23.51)	2052.82 (22.2[illegible])	2397.20 (19.66)	226.20	232.40	224.74
2. Non cereals.	3540.52 (39.15)	3096.[illegible]8 (33.[illegible]6)	4132.03 (33.90)	376.65	350.50	387.38
Sub Total(A)	5666.79 (62.66)	5148.[illegible]0 (56.1[illegible])	6529.23 (53.56)	602.85	582.90	612.12
B. Non-f[illegible] Items:						
1. Clothing & footwear.	745.57 (8.24)	697.50 (7.61)	1389.00 (11.39)	79.32	78.96	130.21
2. Fuel & lighting	211.59 (2.34)	174.23 (1.90)	219.07 (1.80)	22.51	19.72	20.54
3. Medicine.	221.38 (2.45)	[illegible]5.18 (3.11)	239.33 (1.96)	23.55	32.28	22.44
4. Travelling	249.20 (2.76)	240.83 (2.63)	260.67 (2.14)	26.51	27.26	24.44
5. Socio-religious ceremonies.	[illegible]	1191.58 (12.99)	1581.83 (12.98)	109.52	134.90	148.30
6. Recreation	366.67 (4.05(	343.10 (3.74)	507.83 (4.16)	39.01	38.84	47.61
7. Toilet	104.61 (1.15)	160.25 (1.75)	197.77 (1.62)	11.13	18.14	18.54
8. Consumer durable goods.	120.24 (1.33)	282.50 (3.08)	246.00 (2.02)	12.79	31.98	23.06
9. Dwelling houses.	270.38 (2.99)	573.82 (6.26)	755.25 (6.20)	28.76	64.96	70.81
10. Litigation	13.33 (0.15)	5.90 (0.06)	167.50 (1.37)	1.42	[illegible].67	15.70
11. Miscellanous.	45.11 (0.50)	66.77 (0.73)	96.93 (0.80)	4.80	7.56	9.08
Sub Total(B)	3377.52 (37.34)	4021.66 (43.86)	5661.18 (46.44)	359.32	455.27	530.73
Grand total (A + B)	9044.31 (100.00)	9170.[illegible]6 (100.00)	12190.41 (100.00)	962.17	1038.17	1142.85

7. [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Grand total	9244.31	3172.[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(A+B)	(100.00)	(100.00)	(100.00)	[illegible]	[illegible]	[illegible]
8. [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
9. [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
9. [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
9. [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
9. [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
9. Dwellings (a)	270.38	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
houses.	(2.90)	(5.32)	(6.26)	[illegible]	[illegible]	[illegible]
B. [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
10. Lighting	12.33	2.03	[illegible]	1.42	[illegible]	[illegible]
1. [illegible]	(0.13)	(0.06)	(1.37)	[illegible]	[illegible]	[illegible]
Footwear.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
11. Miscellaneous.	45.11	66.17	[illegible]	4.89	7.56	[illegible]
[illegible]	(0.49)	(0.46)	(0.66)	[illegible]	[illegible]	[illegible]
Total (B)	[illegible]	[illegible]	[illegible]	259.32	155.27	590.74
Grand total	[illegible]	[illegible]	[illegible]	968.17	1038.17	1142.85
(A+B)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

over 1968-69 worked out to be 15.75 and 53.66 in 1969-70 and 1971-72 respectively. The expenditure on clothing and footwear occupied the second place in non-food items for all the years. Per household expenditure on this component increased from Rs 745.57 in 1968-69 to Rs 1389.00 in 1971-72 and accounted for 8.24 and 11.39 per cent of total expenditure during the corresponding period. The expenditure on recreation increased from Rs 366.67 in 1968-69 to Rs 507.83 in 1971-72. Its share in the total expenditure increased from 4.05 to 4.16 per cent during the corresponding period. The expenditure on consumer durable goods and dwelling houses witnessed a consistent increase from Rs 390.62 in 1968-69 to Rs 856.32 and Rs 1001.25 in 1969-70 and 1971-72 respectively. The percentage share of expenditure on these items to total expenditure increased from 4.32 in 1968-69 to 8.22 per cent in 1971-72. Per household expenditure on litigation also increased from Rs 13.33 in 1968-69 to Rs 167.50 in 1971-72, which formed 0.15 and 1.37 per cent of total household expenditure during the corresponding period.

Per capita household expenditure increased from Rs 962.17 in 1968-69 to Rs 1038.17 and 1142.85 in 1969-70 and 1971-72 respectively. The percentage increase in household expenditure per capita over 1968-69 worked out to be 7.90 and 18.78 during the corresponding period. Per capita expenditure on food-items witnessed a marginal increase from Rs 602.85 in 1968-69 to Rs 612.12 in 1971-72. But the expenditure on non-food items increased from Rs 359.32 in 1968-69 to Rs 455.28 and 530.73 in 1969-70 and 1971-72 respectively. The percentage increase in this expenditure over 1968-69 came out to be 26.71 and 47.70 during the corresponding period.

A critical examination of per capita expenditure of various non-food items showed that expenditure on socio-religious ceremonies

increased from Rs 109.52 in 1968-69 to Rs 134.90 and 148.30 in the subsequent years. Per capita expenditure on clothing and footwear witnessed an increase from Rs 79.32 in 1968-69 to Rs 130.21 in 1971-72. The expenses on recreation increased from Rs 39.01 to 47.61 during the corresponding period. Per capita expenditure on consumer durable goods and dwelling houses increased from Rs 41.55 in 1968-69 to 93.87 in 1971-72 and showed that the cultivating households were conscious of increasing their living standards and spent increasing amount on these prestigious items in the recent years.

An examination of different items in the total food expenditure showed that expenditure on cereals accounted for 37.52, 39.87 and 36.71 per cent of food expenditure in 1968-69, 1969-70 and 1971-72 respectively (Table 10.3). The expenditure on non-cereals increased from Rs 3540.52 in 1968-69 to 4132.03 in 1971-72 and formed 62.48 and 63.29 per cent of total food expenditure during the corresponding period. The percentage increase in expenditure on non-cereals over 1968-69 worked out to be 16.71 in 1971-72.

The expenditure on milk and milk products occupied the first place in non-cereals and formed 32.80, 31.50 and 30.63 per cent of total food expenditure in 1968-69, 1969-70 and 1971-72 respectively. The expenses on tea, gur and sugar increased from Rs 1141.39 in 1968-69 to Rs 1593.27 in 1971-72. Its proportion to the total food expenditure increased from 20.14 and 24.40 during the corresponding period and gave an indication that the cultivating households spent about one-fourth of the total food expenditure on this item in 1971-72. Per household expenses on fruits increased from Rs 5.04 in 1968-69 to Rs 86.80 in 1971-72 and its contribution to the total food expenditure increased from 0.09 to 1.33 per cent during the corresponding period.

Table 10.3.

Average and per capita expenditure on food items, 1968-69, 1969-70 and 1971-72
(in Rs)

Items	Expenditure per household			Expenditure per capita		
	1968-69	1969-70	1971-72	1968-69	1969-70	1971-72
A. Cereals.	2126.27 (37.52)	2052.82 (39.87)	2397.20 (36.71)	226.20	232.40	224.74
B. Non-Cereals						
1. Milk & milk products.	1858.67 (32.80)	1621.86 (31.50)	1999.93 (30.63)	197.73	183.61	187.49
2. Tea, gur and sugar.	1141.39 (20.14)	975.41 (18.94)	1593.27 (24.40)	121.42	110.42	149.37
3. Pulses and vegetables.	399.17 (7.05)	318.63 (6.19)	315.83 (4.84)	42.46	36.07	29.61
4. Fruits	5.04 (0.09)	4.85 (0.09)	86.80 (1.33)	0.54	0.55	8.14
5. Others	136.25 (2.40)	175.33 (3.41)	136.20 (2.09)	14.50	19.85	12.77
6. Sub Total (B)	3540.52 (62.48)	3096.08 (60.13)	4132.03 (63.29)	376.65	350.50	387.38
Grand Total (A + B)	5666.79 (100.00)	5148.90 (100.00)	6529.23 (100.00)	602.85	582.90	612.12

Per capita expenditure on cereals in 1971-72 stood at almost the same level in 1968-69. Also, per capita expenditure on milk and milk products in 1971-72 was not very different from that of 1968-69. The expenditure on tea, gur and sugar increased from Rs 121.42 in 1968-69 to Rs 149.37 in 1971-72. Per capita expenditure on fruits also increased from Rs 0.54 to 8.14 during the corresponding period, which gives an indication of enlargement of the food basket.

Household expenditure for different sized holdings

Average household expenditure for different sized holdings is given in Table 10.4. It increased from Rs 6263.15, 8764.66 and 11642.48 in 1968-69 to 7269.50, 9533.81 and 18014.18 in 1971-72 for small, medium and large holdings respectively. The percentage increase in household expenditure over 1968-69 worked out to be 16.07, 8.78 and 54.73 per cent in 1971-72 for the different sized holdings respectively. The expenditure on food items increased from Rs 4152.52 and Rs 7114.48 in 1968-69 to Rs 4391.84 and Rs 9225.73 in 1971-72 for small and large holdings respectively. It, however, decreased in case of medium holdings during this period. The proportion of expenditure on food items to total expenditure decreased with the increase in farm size. It also witnessed a relative decline for all the three sized holdings. The percentage share of this expenditure to total household expenditure decreased from 66.30, 62.67 and 61.11 in 1968-69 to 60.42, 54.89 and 51.21 in 1971-72 for small, medium and large holdings respectively. The relative fall in this expenditure over time was in consonance with economic theory. Per household expenditure on non-food items increased from Rs 2110.63, 3271.38 and 4528.00 in 1968-69 to 2877.66, 4299.74 and 8788.45 in 1971-72 for small, medium and large holdings respectively.

Table 0.4

Average household expenditure for different sized holdings, 1968-69, 1969-70 and 1971-72.

Items	1968-69			1969-70			1971-72		
	Small	Medium	Large	Small	Medium	Large	Small	Medium	Large
A. Food Items									
1. Cereals	1609.66	1952.10	2799.02	1549.30	2131.70	2419.20	1580.00	2020.38	3288.27
	(25.70)	(22.27)	(24.04)	(25.10)	(22.10)	(21.33)	(21.74)	(21.19)	(18.25)
2. Non-cereals	2542.86	3541.18	4315.46	2249.33	3440.84	3478.93	2811.84	3213.69	5937.46
	(40.60)	(40.40)	(37.07)	(36.43)	(35.68)	(30.67)	(38 .68)	(33.70)	(32.96)
Sub Total (A)	4152.52	5493.28	7114.48	3798.63	5572.54	5898.13	4391.84	5234.07	9225.73
	(66.30)	(62.67)	(61.11)	(61.53)	(57.78)	(52.00)	(60.42)	(54.89)	(51.21)
B. Non Food Items									
1. Clothing and footwear	500.64	666.82	1058.24	385.56	679.36	998.19	937.50	1183.46	1878.18
	(7.99)	(7.61)	(9.09)	(6.26)	(7.04)	(8.80)	(12.90)	(12.41)	(10.43)
2. Fuel and lighting	124.68	209.69	282.14	122.80	205.66	185.95	198.50	166.92	191.90
	(1.99)	(2.39)	(2.42)	(1.99)	(2.13)	(1.64)	(2.72)	(1.75)	(1.62)
3. Medicine	203.43	239.44	207.24	289.48	237.00	334.32	120.00	188.46	364.55
	(3.25)	(2.73)	(1.78)	(4.71)	(2.46)	(2.95)	(1.65)	(1.98)	(2.02)
4. Travelling	164.47	222.54	356.57	171.69	299.64	238.35	158.33	152.31	444.55
	(2.63)	(2.54)	(3.06)	(2.78)	(3.12)	(2.10)	(2.18)	(1.60)	(2.47)
5. Socio-Religious ceremonies	671.36	803.80	1658.92	1035.08	1125.82	1404.75	875.83	842.31	2840.91
	(10.72)	(9.17)	(14.25)	(16.59)	(11.67)	(12.38)	(12.05)	(8.84)	(15.77)
6. Recreation	147.04	427.08	443.64	193.44	321.27	501.80	200.00	270.39	956.36
	(2.35)	(4.87)	(3.81)	(3.14)	(3.33)	(4.42)	(2.75)	(2.84)	(5.31)
7. Toilet	47.85	122.75	120.53	82.67	169.66	219.75	141.67	151.77	282.73
	(0.76)	(1.40)	(1.04)	(1.36)	(1.76)	(1.94)	(1.95)	(1.59)	(1.57)
8. Consumer durable goods	92.65	166.99	146.77	45.00	104.09	692.50	200.00	268.46	244.55
	(1.48)	(1.34)	(1.26)	(0.75)	(1.08)	(6.10)	(2.75)	(2.82)	(1.36)

Contd.....2.

Items	1968-69			1969-70			1971-72		
	Small	Medium	Large	Small	Medium	Large	Small	Medium	Large
9. Dwelling houses	123.69 (1.98)	398.57 (4.55)	185.04 (1.59)	- -	878.61 (9.11)	755.00 (6.66)	- -	931.35 (9.77)	959.10 (5.33)
10. Litigation	21.42 (0.34)	7.14 (0.08)	16.67 (0.14)	9.67 (0.18)	- -	9.00 (0.08)	- -	67.31 (0.70)	377.26 (2.09)
11. Miscellaneous 1	13.40 (0.21)	56.56 (0.65)	51.94 (0.45)	43.16 (0.71)	50.50 (0.52)	105.94 (0.93)	45.83 (0.63)	77.00 (0.81)	148.36 (0.82)
11. Sub Total (B)	2110.63 (33.70)	3271.33 (37.33)	4528.00 (38.89)	2378.55 (38.47)	4071.61 (42.22)	5445.55 (48.00)	2877.66 (39.58)	4299.74 (45.11)	8788.45 (48.79)
Grand Total (A+B)	6263.15 (100.00)	8764.66 (100.00)	11642.48 (100.00)	6177.18 (100.00)	9644.15 (100.00)	11343.68 (100.00)	7269.50 (100.00)	9533.81 (100.00)	18014.18 (100.00)

The percentage increase in this expenditure worked out to be 36.34, 31.41 and 94.09 per cent in 1971-72 over 1968-69. The proportion of expenditure on non-food items to total household expenditure increased from 33.70, 37.33 and 38.89 in 1968-69 to 39.58, 45.11 and 48.79 per cent in 1971-72.

It was hypothesized that the consumption pattern of large holdingsdiffered from that of small holdings. The expenditure on socio-religious ceremonies occupied the first place in non-food items for large holdings in all the years under study. It occupied the first position in 1968-69 and 1969-70 for small and medium holdings. Per household expenditure on this component increased from Rs 671.36, 803.80 and 1658.92 in 1968-69 to 875.83, 842.31 and 2840.91 in 1971-72 for small, medium and large holdings respectively. Its share in the total household expenditure increased from 10.72 and 14.25 per cent in 1968-69 to 12.05 and 15.77 per cent in 1971-72 for small and large holdings respectively and indicated that both the small and large holdings spent an increasing proportion of total expenditure on socio-religious ceremonies and particularly on marriages. This was indeed an irrational spending behaviour of cultivating households in the initial stages of development. Such unproductive expenditure should be reduced to the minimum and farm savings ploughed back for further improvement of farm organization and building up farm infrastructure.

The expenditure on clothing & footwear occupied the next place for large holdings in all the years under reference. It enjoyed the first position for small and medium holdings in 1971-72. Per household expenditure on this component increased from Rs 500.64, 666.82 and 1058.54 in 1968-69 to 937.50, 1183.46 and 1878.18 in 1971-72 for small, medium and large holdings respectively. The percentage expenditure

on clothing & footwear to total household expenditure increased from 7.99, 7.61 and 9.09 in 1968-69 to 12.90, 12.41 and 10.43 per cent in 1971-72. The magnitude and relative importance of expenditure on consumer durable goods also increased for all the farm size groups during the corresponding period and was a pointer to the important shifts in living standards of the cultivating households in the recent years.

Per household expenditure on recreation increased from Rs 147.04 and 443.64 in 1968-69 to Rs 200.00 and 956.36 in 1971-72 for small and large holdings respectively. It accounted for 2.35 and 2.75 per cent of total household expenditure for small holdings and 3.81 and 5.31 for large holdings during the corresponding period. This increase was mainly due to the increase in the consumption of liquor in the recent years. The expenditure on litigation increased from Rs 7.14 and 16.67 in 1968-69 to 67.31 and 377.26 in 1971-72 for medium and large holdings respectively, and its share in the total household expenditure increased from 0.08 and 0.14 in 1968-69 to 0.70 and 2.09 in 1971-72.

Per capita household expenditure for different sized holdings is shown in Table 10.5. It increased from Rs 769.17, 1014.10 and 1007.52 in 1968-69 to Rs 838.79, 1032.83 and 1338.89 in 1971-72 for small, medium and large holdings respectively. The percentage increase in per capita expenditure over 1968-69 worked out to be 9.05, 1.85 and 32.89 per cent in 1971-72. Per capita expenditure on food items decreased for small and medium holdings during this period. On the other hand, per capita expenditure on non-food items increased from Rs 259.21, 378.52 and 391.85 in 1968-69 to 332.05, 465.80 and 653.19 in 1971-72 for small, medium and large holdings respectively.

Again, per capita expenditure on socio-religious ceremonies increased both for small and large holdings during this period. The per

Table 10.5

Per capita household expenditure for different sized holdings, 1968-69, 1969-70 and 1971-72.

Items	1968-69			1969-70			1971-72		
A. Food Items	Small	Medium	Large	Small	Medium	Large	Small	Medium	Large.
1. Cereals	197.68	225.86	242.22	217.87	227.66	[illegible]	182.30	218.88	244.40
2. Non-cereals.	312.28	409.72	373.45	316.31	367.47	354.99	324.44	348.15	441.30
Sub Total (A)	509.96	635.58	615.67	534.18	595.13	601.85	506.74	567.03	685.70
B. Non-food items.									
1. Clothing & footwear.	61.48	77.15	91.61	54.22	72.55	101.86	108.17	128.21	139.59
2. Fuel & lighting.	15.31	24.26	24.42	17.27	21.96	18.98	22.92	18.08	21.70
3. Medicine	24.98	27.70	17.93	40.71	25.31	34.11	13.84	20.42	27.10
4. Travelling	20.20	25.75	30.86	24.14	32.00	24.32	18.27	16.50	33.04
5. Socio-religious ceremonies.	82.45	93.00	143.56	145.56	120.23	143.34	101.06	91.25	211.15
6. Recreation.	18.06	49.41	38.39	27.20	34.31	51.20	23.08	29.29	71.08
7. Toilet.	5.88	14.20	10.43	11.63	18.12	22.42	16.35	16.44	21.01
8. Consumer-durable goods.	11.38	13.54	12.70	6.33	11.12	70.66	23.08	29.08	18.18
9. Dwelling houses.	15.19	46.13	16.01	-	93.83	77.04	-	100.90	71.28
10. Litigation.	2.63	0.83	1.44	1.36	-	0.92	-	7.29	28.04
11. Miscellanous.	1.65	6.55	4.50	6.06	5.39	10.82	5.28	8.34	11.02
Sub Total (B)	259.21	378.52	391.85	334.48	434.82	555.67	332.05	465.80	653.19
Grand Total (A+B)	769.17	1014.10	1007.52	868.66	1029.95	1157.52	838.79	1032.83	1338.89.

capita expenditure on clothing & footwear increased from Rs 61.48, 77.15 and 91.61 in 1968-69 to Rs 108.17, 128.21 and 139.59 for small, medium and large holdings respectively. Again, per capita expenditure on consumer durable goods also increased for all the three sized holdings, thereby indicating the increased expenditure on items of social status by the cultivators in the recent years. Per capita expenditure on recreation witnessed an increase for small and large holdings over a span of three years.

Per household expenditure on cereals increased from Rs 1952.10 and 2799.02 in 1968-69 to 2020.38 and Rs 3288.27 in 1971-72 for medium and large holdings respectively(Table 10.6). However, the relative importance of expenditure on cereals to total food expenditure decreased for small and large holdings during this period. But per household expenditure on non-cereals increased for these groups; which shows an improvement in the level of living of the rural population.

The expenditure on milk & milk products increased with the increase in farm size and contributed 30.55, 31.79 and 29.87 per cent of total food expenditure on small, medium and large holdings respectively. Next in importance was the expenditure on tea, gur and sugar, which increased from Rs 751.20, 1129.27 and 1463.71 in 1968-69 to Rs 1103.00, 1146.38 and 2388.82 in 1971-72 for small, medium and large holdings respectively. Its share in the total food expenditure increased from 18.09, 20.56 and 20.57 per cent in 1968-69 to 25.11, 21.90 and 25.89 per cent in 1971-72 which showed the increased importance of expenditure on this item for these holdings in the recent years. Per household expenditure on fruits and its relative importance in the total food expenditure also increased for all the farm size groups, indicating the consumption of quality food by the cultivating households in the recent years.

Table 10.6

Per household expenditure on food items for different sized holdings, 1968-69, 1969-70 and 1971-72

Items.	1968-69			1969-70			1971-72		
	Small	Medium	Large	Small	Medium	Large	Small	Medium	Large
A. Cereals.	1609.66 (38.76)	1952.10 (35.54)	2799.02 (39.34)	1549.30 (40.79)	2131.70 (38.25)	2419.20 (41.02)	1580.00 (35.98)	2020.38 (38.60)	3288.27 (35.64)
B. Non-cereals.									
1. Milk & milk products	1378.21 (33.19)	1850.80 (33.69)	2244.60 (31.55)	1215.28 (31.99)	1771.35 (31.79)	1823.35 (30.91)	1341.66 (30.55)	1664.08 (31.79)	2755.92 (29.87)
2. Tea, gur and sugar.	751.20 (18.09)	1129.27 (20.56)	1463.71 (20.57)	728.74 (19.18)	1101.02 (19.76)	1059.25 (17.96)	1103.00 (25.11)	1146.38 (21.90)	2388.32 (25.89)
3. Pulses and vegetables.	296.45 (7.14)	426.08 (7.75)	437.19 (6.15)	195.96 (5.16)	367.72 (6.60)	375.05 (6.36)	205.00 (4.67)	245.76 (4.70)	459.09 (4.98)
4. Fruits.	6.86 (0.17)	6.96 (0.13)	0.67 (0.01)	1.81 (0.05)	4.18 (0.07)	8.32 (0.14)	57.51 (1.31)	59.16 (1.13)	135.45 (1.47)
5. Others.	110.14 (2.65)	128.07 (2.33)	169.29 (2.38)	107.54 (2.83)	196.57 (3.53)	212.96 (3.61)	104.67 (2.38)	98.31 (1.88)	198.18 (2.15)
Sub Total (B)	2542.86 (61.24)	3541.18 (64.46)	4315.46 (60.66)	2249.33 (59.21)	3440.84 (61.75)	3478.93 (58.98)	2811.84 (64.02)	3213.69 (61.40)	5937.46 (64.36)
Grand Total (A + B)	4152.52 (100.00)	5493.28 (100.00)	7114.48 (100.00)	3798.63 (100.00)	5572.54 (100.00)	5898.13 (100.00)	4391.84 (100.00)	5234.07 (100.00)	9225.73 (100.00)

Table 10.7

Per capita expenditure on food items for different sized holdings, 1968-69, 1969-70 & 1971-72.

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Items.	1968-69			1969-70			1971-72.		
	Small	Medium	Large	Small	Medium	Large	Small	Medium	Large
A. Cereals.	197.68	225.86	242.22	217.87	227.66	246.86	182.31	218.88	244.40
B. Non-cereals									
1. Milk & milk products.	169.25	214.14	194.25	170.90	189.17	186.05	154.81	180.27	204.83
2. Tea, gur and sugar.	92.25	130.66	126.69	102.48	117.58	108.09	127.27	124.19	177.55
3. Pulses and vegetables.	36.41	49.30	37.83	27.56	39.27	38.27	23.65	26.63	34.12
4. Fruits.	0.84	0.80	0.01	0.25	0.46	0.85	6.63	6.41	10.07
5. Others.	13.53	14.82	14.67	15.12	20.99	21.73	12.08	10.65	14.73
Sub total (B)	312.28	409.72	373.45	316.31	367.47	354.99	324.44	348.15	441.30
Grand Total. (A + B)	509.96	635.58	615.67	534.18	595.13	601.85	506.75	567.03	685.70

Per capita expenditure on cereals in 1971-72 showed a marginal decline over 1968-69 for small and medium holdings(Table 10.7). It stood at almost the same level for large holdings. Per capita expenditure on non-cereals increased from Rs 312.28 and 373.45 in 1968-69 to Rs 324.44 and Rs 441.30 in 1971-72 for small and large holdings respectively.

Per capita expenditure on milk & milk products worked out to be Rs 154.81 and 180.27 for small and medium holdings in 1971-72. It increased from Rs194.25 in 1968-69 to Rs 204.83 in 1971-72 for large holdings. Per capita expenditure on tea, gur and sugar increased from Rs 92.25 and 126.69 in 1968-69 to Rs 127.27 and Rs 177.55 in 1971-72 for small and large holdings respectively. Per capita expenditure on fruits also increased in all the farm size groups. The percentage increase in this component in 1971-72 over 1968-69 was the highest for large holdings.

Functional relationship between farm business income and household expenditure

To study the relationship between per capita income and household expenditure, linear regression was fitted to the data for all the years, where Y shows per capita household expenditure and X per capita farm business income(Table 10.8).

Table 10.8

Regression coefficients and their significance, 1968-69, 1969-70 and 1971-72

	1968-69	1969-70	1971-72
Value of 'b'	.0953 (.1103)	.4906** (.1326)	.2641** (.0589)
Elasticity	.0978	.6925	.3494
R^2	.0532	.3119**	.4174**
Y=a+bX	21.64+.0953X	328.36+.4906X	795.31+.2641X

The coefficient of determination (R^2) indicating the variations explained by farm business income in household expenditure was significant at 1 per cent level for 1969-70 and 1971-72. Income elasticities increased from .0978 in 1968-69 to .6925 and .3494 in 1969-70 and 1971-72 respectively. The increasing elasticities in 1969-70 and 1971-72 over 1968-69 indicated the higher relative response to household expenditure in these years as a result of shifts in farm business income.

Socio-economic characteristics and household expenditure

Of all the socio-economic characteristics studied, only size of family and number of earners were significant in influencing the household expenditure in 1969-70 and 1971-72 respectively(Table 10.9). For the remaining, type of ownership and educational level of the head of the family, the difference in household expenditure was not significant.

Size of family and household expenditure

The household expenditure was influenced by the increase in the size of family in 1969-70. Average household expenditure increased from Rs 2746.54 in case of households having 1-3 members to Rs 13040.36 in case of households with 10 and above family members. 'F' value came to 5.7397, which was significant at 1 per cent level.

Number of earners and household expenditure

The household expenditure was also influenced by the increase in the number of earners in 1971-72. Average household expenditure increased from Rs 7744.00 in case of two earners to Rs 18370.50 in case of five and above earners. 'F' value came out to be 3.9710, which was significant at 5 per cent level.

Table : 10.9

Average household expenditure and 'F' values for testing the various characteristics, 1968-69, 1969-70 and 1971-72.

Characteristics	1968-69 Average household expenditure.	d.f.	'F' value.	1969-70 Average household expenditure	d.f.	'F' value.	1971-72. Average household expenditure.	d.f.	'F' value
1. Type of Ownership									
Owners	8282.93	1; 28	.9277	8601.38	1;28	.9686	12436.79	1;28	.4136
Part Owners	9914.47	1		10498.67			11974.81		
2. Size of Family									
1-3	-			2746.54			4103.50		
4-6	6545.69			5245.21		**	10897.00	3;26	1.4302
7-9	8914.26	2;27	1.6212	8585.41	3;26	5.7397	12609.33		
10 & above.	10725.56			13040.36			13113.58		
3. Number of Earners.									
1	7947.75			7201.07			-		
2	8137.60			10903.78			7744.00		
3	9722.68	4;25	.5992	9031.21	4;25	.6667	11477.50	3;26	3.9710*
4	13265.19			10563.63			13215.00		
5 & above	8875.19			11680.14			18370.50		
4. Educational Level of the Head									
Illiterate	7996.26			8510.35			12131.42		
Primary	10596.26	3;26	.8795	5572.28	3;26	1.7557	14180.52	3;26	2.3976
Middle	10892.52			12691.18			14510.67		
Matric & above	10950.92			8709.57			6596.67		

Household expenditure of the labour households

Average and per capita household expenditure of the labour households is presented in Table 10.10. Average household expenditure amounted to Rs 2204.90 and accounted for 96.81 per cent of the average income in 1971-72. It indicated that almost all the income of the labour households was spent as household expenditure.

As regards the relative importance of food and non-food items, the expenditure on food items worked out to be Rs 1325.92, which accounted for 60.13 per cent of the total household expenditure in 1971-72. This proportion was almost equal to the proportion spent on food by small cultivating holdings. However, the per household expenditure on this component was higher(Rs 4391.84) for the small cultivating holdings than for the labour households(Rs 1325.92) in 1971-72. The per household expenditure on non-food items came out to be Rs 878.98, which formed 39.87 per cent of the total household expenditure for the labour households in 1971-72.

The expenditure on clothing and footwear occupied the first place in non-food items. This component also enjoyed the first position for small and medium cultivating holdings in 1971-72. The expenditure on this component amounted to Rs 361.82 for the labour households, which contributed 16.41 per cent of the total household expenditure.

The expenditure on socio-religious ceremonies held the next place. The magnitude of expenditure on this component amounted to Rs 228.87, which accounted for 10.38 per cent of the total household expenditure. It indicated that the labour households also gave much importance to this item inspite of their meagre incomes and low consumption levels.

Table 10.10

Average and per capita household expenditure of the labour households, 1971-72.

Items	Per household expenditure	(in Rs.) Per capita expenditure
A. Food Items		
1. Cereals	633.12 (28.71)	108.74
2. Non-cereals	692.80 (31.42)	118.99
Sub total (A)	1325.92 (60.13)	227.73
B. Non-food Items		
1. Clothing & footwear	361.82 (16.41)	62.15
2. Fuel & lighting	19.84 (0.90)	3.41
3. Medicine	48.96 (2.22)	8.41
4. Travelling	35.39 (1.61)	6.08
5. Socio-religious ceremonies	228.87 (10.38)	39.31
6. Recreation	35.57 (1.61)	6.11
7. Toilet	42.12 (1.91)	7.23
8. Consumer durable goods	30.45 (1.38)	5.23
9. Dwelling houses	58.07 (2.63)	9. 97
10. Litigation	3.33 (0.16)	0.57
11. Miscellaneous	14.56 (0.66)	2.50
Sub Total (B)	878.98 (39.87)	150.97
Grand Total (A+B)	2204.90 (100.00)	378.70

The per household expenditure on dwelling houses was estimated at Rs 58.07 and constituted 2.63 per cent of the total household expenditure. The magnitude of expenditure on consumer durable goods was Rs 30.45, which accounted for 1.38 per cent of the total household expenditure. It showed that the labour households spent only 4.01 per cent of the household expenditure on the formation of household assets.

Per household expenditure on recreation worked out to be Rs 35.57 and contributed 1.61 per cent of the total household expenditure. This figure was higher than that of the expenditure on consumer durable goods. This was mainly due to the demonstration effect of the cultivating households, which consumed liquor and other intoxicants.

Per capita household expenditure of the labour households worked out to be Rs 378.70 in 1971-72. This expenditure was estimated at Rs 838.79, Rs 1032.83 and Rs 1338.89 for small, medium and large cultivating holdings respectively in 1971-72. It pointed out that even in the case of small holdings, the per capita household expenditure was more than twice of the labour households. Per capita expenditure on food items amounted to Rs 227.73 for the labour households. The expenditure on this component was Rs 506.74 even in case of the small holdings. It indicated that the consumption standard of the labour households was lower than that of the cultivating households. Per capita expenditure on cereals was also lower in the case of labour households than that of the cultivating households.

The per capita expenditure on clothing & footwear came to be Rs 62.15 in the case of labour households. The expenditure on this component was Rs 108.17, 128.21 and 139.59 for small, medium and large cultivating holdings respectively in 1971-72. This again indicated low level of standard of living of the labour households.

Per capita expenditure on socio-religious ceremonies was estimated at Rs 39.31 for the labour households. The expenditure on recreation came to be Rs 6.11. The expenditure on these components was again higher for the cultivating households.

The per household expenditure on cereals worked out to be Rs 633.12, which accounted for 47.75 per cent of the total food expenditure(Table 10.11). This percentage was 35.98 for the small holdings and indicated that the labour households spent relatively more on cereals than the cultivating households did. The expenditure on non-cereals came to be Rs 692.80 for the labour households, whereas it was Rs 2811.84, 3213.69 and 5937.46 for small, medium and large holdings respectively.

The expenditure on tea, gur and sugar occupied the first place in non-cereals for the labour households. The magnitude of this component worked out to be Rs 298.76 and accounted for 22.53 per cent of the total food expenditure. Next in importance was the expenditure in milk and milk products, which contributed 21.30 per cent of the total food expenditure. The per household expenditure on fruits was only Rs 10.52. The per household expenditure on all these components was higher for the cultivating households.

Per capita expenditure on tea, gur and sugar was estimated at Rs 51.31 for the labour households. The expenditure on milk and milk products amounted to Rs 48.50 and the expenditure on fruits was Rs 1.81. Per capita expenditure on these components was also higher for the cultivating households.

The study showed that some of the selected labour households borrowed funds for financing their household expenditure. The borrowings

Table 10.11

Average and per capita expenditure on food items of the labour households, 1971-72.

(in Rs.)

Items	Per household expenditure	Per capita expenditure
A. Cereals	633.12 (47.75)	108.74
B. Non-cereals		
1. Milk & milk products	282.36 (21.30)	48.50
2. Tea, gur and sugar	298.76 (22.53)	51.31
3. Pulses & vegetables	70.92 (5.35)	12.18
4. Fruits	10.52 (0.79)	1.81
5. Others	30.24 (2.28)	5.19
Sub Total (B)	692.80 (52.25)	118.99
Grand Total (A+B)	1325.92 (100.00)	227.73

per household, along with their source and purpose, is given in Table 10.12. The per household borrowings amounted to Rs 327.00 in 1971-72. The borrowings for socio-religious ceremonies occupied the first place and accounted for 42.81 per cent of the total borrowings in 1971-72. The borrowings for home consumption amounted to Rs 99.33 and constituted 30.38 per cent of the total borrowings. The borrowings for house construction formed 14.61 per cent of the total borrowings.

Table 10.12 reveals that the zamindar was the predominant source of borrowings in case of the labour households. The borrowings from this source worked out to be Rs 164.89 and constituted 50.43 per cent of the total borrowings. These borrowings were mostly used for home consumption, socio-religious ceremonies and house construction etc. All this indicates that the labour households had to borrow even for meeting the needs of home consumption.

Table 10.12

Per household borrowings of the labour households, 1971-72.

(in Rs)

Source of borrowing	Purpose of borrowing					
	Home consumption	Socio-religious ceremonies	House construction	Illness	Cloth purchase	Total
Village money lender	11.11	-	-	2.22	-	13.33
Zamindar	53.78	84.44	22.22	4.45	-	164.89
Relatives/Friends	34.44	11.11	25.56	-	-	71.11
Others	-	44.45	-	-	33.22	77.67
Total	99.33	140.00	47.78	6.67	33.22	327.00

CHAPTER XI

SOCIAL IMPLICATIONS OF H.Y.V.P.

One aspect of the H.Y.V.P. that has received greater attention during the last few years is the debate on inequality of income distribution and the inherent danger of social tensions arising out of it. There are a few reports of growing tensions between farmers and farm labourers in some parts of the country, but in the Punjab, no serious inter-class conflict has come to the surface. Many factors, economic, political and social, might have contributed to the social harmony in the rural areas of the state. This chapter is an attempt to bring into focus the impact of the H.Y.V.P. on the rural social structure.

The hypothesis to be tested is that the social disharmony is not necessarily the result of inequality in income distribution, but results from lack of a cohesive social structure in the rural areas. In other words, social tension will be less in an area, where the perceived gap between castes or classes is small, and where the attitudes and values of these classes are more similar to a certain extent.

The aim of the study was to highlight the changes that have occurred within the last five years in the sphere of inter-group relation in the leadership pattern, and in the educational and occupational aspiration, as a result of changes in the economic structure. The data were collected from all the heads of households in the three study villages in respect of inter-caste relation and leadership qualities, and from the heads of sample households in respect of determinants of social status and occupational and education aspirations.

Inequality of income

The study showed that the incomes of all categories of farmers have increased over the last five years, although in unequal proportions. The large farmers gained more (about 60 per cent) than the small (32.66%) and the medium (25.22%) farmers. But their gains need to be reviewed in the context of large capital investment by the large farmers in building up farm infrastructure and heavy borrowings from the financial institutions.

The agricultural labourers' gain from the H.Y.V.P. can be judged from the rise in daily wage rates, from Rs 5.50 in 1967-68 to 7.24 in 1971-72 and increase in employment opportunities. The study showed that the labourers(man hours) employed by the farmers in case of HYV of wheat increased from 112.36 in 1967-68 to 164.65 in 1971-72.

In terms of per capita income, there was a wide gap between small and large farmers, whereas this gap was narrower between agricultural labourers and small farmers.

Perceived differences between castes

The rigidity-flexibility dimension of the caste system in the rural society was measured on the basis of people's perception of the existing caste differences. The data on the existence of such differences are presented in Table 11.1. It is apparent from this table that an overwhelming majority of the respondents, belonging to high as well as low castes, felt that the social distance between high and low castes was considerably narrowed in the recent years. The percentage of total respondents, who stated that caste differences were reduced, was 90.15. The Jat, other castes (intermediate) and Harijans supporting this view,

Table 11.1

Change in the Caste Structure

Respondents stating overall caste differences.	Number and percent of each caste citing			
	Jat	Harijans	Others	Total
1. Have remained same	6 (1.15)	37 (10.79)	5 (6.67)	48 (5.11)
2. Have been reduced somewhat	476 (91.36)	306 (89.21)	69 (92.00)	851 (90.63)
3. Completely vanished	39 (7.49)	-	1 (1.33)	40 (4.26)

The figures in the parentheses denote percentages to total.

accounted for 90.49, 92.00 and 89.21 per cent respectively. Only a small percentage of the respondents in these caste groups thought that the caste system was the same as before. The percentage supporting this view was the highest among the Harijans(10.79 per cent), followed by other castes (6.67 per cent), and Jat (1.14 per cent).

There is thus evidence to show that in the recent years, there has been a definite shift in the caste system, from rigidity towards flexibility.

Social relations

To measure the changes that have occurred in the pattern of social relations in the recent years, the respondents were asked to give their views about the commensal relations (inter-dining), occupational opportunities, educational opportunities, and overall caste status. The data on these attitudes/characteristics are presented in Table 11.2.

Inter-dining : The caste system is traditionally manifest in rural areas in inter-dining restrictions. It is apparent from Table 11.2 that a majority of the respondents among the Jat (upper caste) felt that as compared to the past, the caste restriction in taking food by upper castes from lower castes was reduced to a certain extent. This was also supported by the Harijan respondents, of whom 40 per cent felt the same way.

Occupational opportunities

It will be seen from Table 11.2 that a majority of the Jat (57.83 per cent) and a large proportion of the Harijans(42.17 per cent) have a feeling that caste as a barrier in choosing an occupation is vanishing from the society. As compared with 67.86 per cent of the farmers,

Table 11.2

Change in the Pattern of Inter-caste Relations.

Gap between castes narrowed in respect of.	Number and percentage of each caste citing		
	Jat	Harijan s	Total
I Inter-dining	153 (58.85)	107 (41.15)	260 (100.00)
II Occupational opportunities.	145 (57.83)	104 (42.17)	249 (100.00)
III Educational opportunities.	73 (48.34)	78 (51.66)	151 (100.00)
IV Social status	35 (55.55)	28 (45.45)	63 (100.00)

Note : (i) Only Jat and Harijan castes group were considered because the total number of respondents of other castes group was negligible.

(ii) A large number of respondents did not answer many of these questions.

(iii) Since more than one response was given by most of the respondents the response total exceeded total respondents.

who wanted their sons to take up non-farm jobs(service, profession, etc.), 90.91 per cent of the agricultural labourers wanted such jobs for their sons. About 9 per cent of the labourers wanted farming, but none of them liked their sons to follow their occupation(Table 11.5)

Educational opportunities

A majority of the Harijan respondents (51.66 per cent) and a large proportion of the Jats (48.34 per cent) felt that caste was no longer a great inhibiting factor in giving education to their children. This is also reflected in the educational aspirations of both the caste groups,(Table 11.4) whereas 65.22 per cent and 34.78 per cent of the Harijans wanted to give their sons, Matriculation and graduate level education, the proportion among the Jats for such levels of education was 40 per cent in each case.

Social status

In regard to social status, there was a general feeling among the Jat and Harijans that caste was no longer the determining factor in status differentiation. Most of the Jats (55.55 per cent) and a large proportion of the Harijans (45.45 per cent) thought the caste status did not lead to status differentiation at present. This means that there was a growing awareness among the once caste conscious people of achievement as an important ingredient in achieving status.

Changing attitudes

There is some evidence to show that the mechanical operation of farm activities is bringing changes in the attitudes of the farmers towards physical work. So far the Punjab farmer is known for his physical

Table 11.5

Farmers and Farm Labourers' Aspiration for their son's occupation.

Preferred occupation	Number of respondents in each category		
	Farmers	Farm Labourers	Total
1. Farming	9 (32.14)	4 (9.09)	13 (18.05)
II Service and other professions.	19 (67.86)	40 (90.91)	59 (81.95)
Total:	28 (100.00)	44 (100.00)	72 (100.00)

The figures in the parentheses denote the percentages to grand total.

Table 11.4

Aspiration of Farmers and Farm Labourers for their sons' education.

Preferred standard of education.	Respondents citing		
	Farmers	Farm labourers	Total
1. Matric	8 (40.00)	15 (65.22)	23 (53.49)
II Graduation	8 (40.00)	8 (34.78)	16 (37.21)
III Post Graduation.	4 (20.00)	-	4 (9.30)
Total	20 (100.00)	23 (100.00)	43 (100.00)

The figures in the perenthesos denote percentages to total.

labour and for his ruggedness. He has made a name and has always been proud of his excellence in the performance of difficult agricultural operations.

Today he has to devote lot more time to supervisory and managerial functions which are associated with the successful adoption of the new technology. In the context of new technology, he is emerging more as an entrepreneur than a rugged stoutly built farmer who was more proud of his brawn than of his brain. During the course of this study, we were struck with the helplessness many farmers showed when a severe power cut came in the Punjab and there were frequent breakdowns of power. The farmers would wait for the electric current to come back to be able to chaff the fodders on electric operated chaff cutters rather than using the traditional fodder cutters which involved so much more manual labour. They would not thresh their wheat unless electric power or diesel oil were made available to them. They thought there was too much physical labour and time involved in the traditional method of thrashing wheat with bullocks. There is a great deal of truth in what they say. But a careful observer will not miss noting the change that is coming in the attitude of the farming population, consequent upon the adoption of mechanical innovations. This would explain at least partly for the helplessness the farmers show in measuring up to the challenges of hard physical tasks, after they get used to working with tractors, tubewells, thrashers and other pieces of farm machinery.

These are some of the implications of new farm technology which would be better appreciated in the context of the changes that are taking place in the attitude of the farmers towards farm work. Thus, in course of time, those qualities of the peasantry, which brought the transformation of agriculture in the state, will lead to the development

of new attitudes and values - greater pride for being known as entrepreneur rather than being known for ruggedness and hard physical labour.

Commercialized agriculture and the changing life style, as evident from the consumption pattern, is also giving rise to increasing demand on social services such as transport, communication and timely supplies of modern inputs. This has naturally led and will further lead to the dependence of the farming community on those agencies and services which are beyond their own community.

The changes thus initiated by the process of modernization of agriculture are likely to have repercussions on the whole fabric of rural life, both economic and social.

Leadership structure

Table 11.5 shows the preferred leadership qualities as indicated by the various strata of the population. It is apparent that the respondents, irrespective of their caste, emphasized secular qualities more than others. For example, the three most important qualities were (1) honesty (2) political influence, and (3) non-involvement in faction politics of the village, while the least important ones were : kinship and traditional leaders.

Social tension

To identify the extent and the forms of unrest in the rural areas within the last five years and whether they were in any way related to the H.Y.V. programme, we first approached the people in the four study villages, who were in a position to know about their community - for instance, village elders and influential persons - and enquired about

Table 11.5

Preferred Leadership Qualities
Respondents citing.

Leadership qualities.	Jat Sikh	Rank order.	Harijans	Rank order.	Others	Rank order	Total	Rank order.
1. Politically influential	483 (32.11)	2	332 (32.71)	2	69 (34.85)	1	884 (32.53)	2
2. Influential within village.	41 (2.73)	6	36 (3.54)	7	8 (4.04)	6	85 (3.13)	7
3. Influential outside village.	97 (6.44)	4	59 (5.81)	4	18 (9.10)	4	174 (6.40)	4
4. Honest and helping nature.	502 (33.38)	1	338 (33.30)	1	64 (32.32)	2	904 (33.27)	1
5. Progressive farmer.	56 (3.73)	5	55 (5.42)	5	12 (6.06)	5	123 (4.53)	5
6. Belonging to no faction.	248 (16.48)	3	138 (13.60)	3	18 (9.10)	3	404 (14.87)	3
7. Officials.	18 (1.19)	8	5 (0.49)	8	3 (1.51)	8	26 (0.96)	8
8. Village Lambardar.	45 (2.99)	7	50 (4.93)	6	5 (2.52)	7	100 (3.68)	6
9. Others (friends Kinship)	14 (0.95)	9	2 (0.20)	9	1 (0.50)	9	17 (0.63)	9
Total	1504 (100.00)		1015 (100.00)		198 (100.00)		2717 (100.00	

The figures in the perenthesis indicate percentages to grand total

the conflicting situations that occurred in the community within the last five years. Twenty four such situations in these villages were recorded. The main participants in these events were then interviewed, for about two hours each, to obtain as clear a picture as possible of such events. It was not possible to probe too deeply into these situations but the study helped to uncover a great deal about the background of the social tensions and conflicts.

It will be seen from Table 11.6 that within the last five years, 24 conflict situations occurred in the village, the average per village per year being 1.2. One or two cases of conflict in a village in a year has been rather common in rural areas, and, therefore, it cannot be said that there has been an increase in social tensions and conflicts in the recent years.

Moreover, such causes as faction rivalry etc. are also mainly traditional in nature. Out of 24 cases, seven were connected with the agricultural operation, such as canal water distribution, wage rates, etc. The remaining cases have hardly any direct relevance with the adoption of new technology. All the conflicts connected with agricultural operations, originated from faction rivalry in the village, some of the factions continuing from generation to generation, while others were of recent origin, either from general election or Panchayat elections within the last four years(Appendix 11.1).

Attitude towards tension

To probe into people's reaction to the recent development in agriculture and measure indirectly their tension proneness, a structured schedule, consisting of 5 statements, was administered to the same respondents(belonging to Jat(farmer) as well as Harijan(agricultural labourer) castes. They were asked to say "Yes" or "No" to these statements.

Table 11.6

Causes of Social Conflict

Main Cause	Form of Unrest	No.	% age
1. Faction rivalry	i Land sale and purchase	4	16.67
	ii Use of Canal Water	3	12.50
	iii Field boundries	3	12.50
	iv Distribution of Fertilizers	2	8.33
	v Wage rates	2	8.33
	vi Credit distribution	1	4.17
	Sub Total	15	62.50
2. Inheritance	i Landed property distribution between family members	4	16.67
	Sub Total	4	16.67
3. Interpersonal	i. Religion	3	12.50
	ii Liquor	1	4.17
	iii Illicit relation	1	
	Sub Total	5	20.83
	Grand Total	24	100.00

The answers given in Table 11.7 show that only a small proportion of the respondents, belonging to both the castes, gave affirmative answers to these statements, which were related to tension situations. This indicates that for most of the respondents, there was no immediate cause of unrest arising from the recent technological advances in agriculture. This probably explains why till now no serious conflicts had arisen in these communities which could be directly attributed to the technology.

Conclusion

The study has highlighted some of the social aspects of H.Y.V. in the Punjab. The inequality in income distribution as a result of H.Y.V. does not seem to have resulted in social unrest in the rural areas of the Punjab. The continuity of social harmony has been possible because of a cohesive social structure and less differentiation among various strata with respect to values and attitudes.

It was brought out in the discussion that both the high and the low castes have a feeling that rigidity of the caste system is giving way to flexibility. The inter-dining between castes is also becoming common. Caste is not considered as barrier, by a large proportion of the caste groups, to give education to or choose occupation for sons. The Jat as well as the Harijans also feel the importance of non-caste factors in determining social status. In the leadership structure, again, all the castes emphasize secular qualities more than others.

The modernization of agricultural operations is creating new demands on such social services as transport, communications, supplies of modern inputs etc. This would pave the way for change in the traditional attitude and value system of the farmers. Whereas the Punjab farmer is

Table 11.7

Tension proneness

Statement	Respondents Agri. (24)	mentioning Non Agri (14)
1. The labourers' conditions have not improved	10	4
2. Importing labour from outside	3	2
3. Insecurity of employment because of rapid mechanization in agriculture.	7	5
4. Economic improvement of large farmers led to frustration to backward section of population.	10	5
5. Labourer try to dictate terms to farmers.	9	-

well known for his ruggedness and hard physical labour, the new technology compels him to devote more time to the managerial and entrepreneurial aspect of the farm business organization than to physical labour. Today, he depends more on hired labour for performing hard physical tasks and himself prefers to do supervisory and entrepreneurial jobs.

The social tensions, in whatever form they are manifested, can hardly be attributed to the recent breakthrough because similar happenings were common in the past also.

It can thus be concluded that in the rural society of Punjab, the narrowing gap between the different strata of population with respect to values, aspirations and attitudes has influenced continuity of a cohesive social structure. As a result, the recent income gap has not been able to create noticeable cleavage among groups.

SUMMARY AND CONCLUSIONS

The project entitled "Social and Economic Implications of Large-Scale Introduction of High-Yielding Varieties of Wheat" was conducted with the following objectives :

1. To identify the factors that promoted/hindered the adoption of HYVP.

2. To examine such institutional changes as land ownership, tenurial relationships, changes in land holdings(size of holding) and the agencies engaged in the supply of modern technological inputs including credit.

3. To examine the pattern of income distribution among the rural classes, and

4. To describe the farm family investment patterns resulting from the adoption of new technology.

The Ferozepur District was purposively selected for the execution of the study, because of the availability of bench-mark data there. Of the 15 villages, in which the Farm Management Study was conducted (1967-68 to 1969-70), three villages (one from each zone) were selected on the basis of the concentration of area under high-yielding varieties of wheat. In addition to the 10 cultivating households already selected in 'Farm Management' scheme from each village, 15 agricultural labour households were randomly selected from each village for the detailed study. Thus the total sample constituted 30 cultivating households and 45 labour households.

In addition to the selection of these three villages, village Ratta Khera was purposively selected to examine the socio-economic changes that had occurred there at different points of time, as this village was earlier surveyed in 1956 and 1961 by the Agro-Economic Research Centre, Delhi. The analysis of this village is presented separately as a case study.

The net area sown in the selected villages increased from 3272 hectares in 1966-67 to 3302 hectares in 1971-72. Area sown more than once registered an increase from 974 to 2114 hectares during the corresponding period. Total cropped area increased from 4246 hectares in 1966-67 to 5416 hectares in 1971-72. As a result, the intensity of cropping increased from 127.05 in 1966-67 to 161.67 in 1971-72. The percentage of area irrigated to net sown area increased from 84.17 in 1966-67 to 91.58 in 1971-72. This increase in the area irrigated came mostly from the installation of tubewells/pumpsets.

The semi-dwarf wheats occupied the predominant place in the cropping pattern of the selected villages. The area under wheat(HYV) increased from 36.53 per cent of the total cropped area in 1966-67 to 47.58 per cent in 1971-72. The area under paddy also increased from 0.02 per cent of the total cropped area in 1966-67 to 4.86 per cent in 1971-72. The area under wheat-gram, gram and barley, however, declined during the corresponding period, which indicated the substitution of more value-oriented cropping patterns by the farmers of the selected villages.

The pace of farm mechanization is evident from the following indicators. The number of tractors increased from 29 in 1966-67 to 74 in 1971-72 in the selected villages. The number of wheat threshers/drummies witnessed a four-fold increase during the corresponding period. The number of electric pumps and oil engines with pumping sets increased from 65 in 1966-67 to 372 in 1971-72.

The proportion of workers to the total population increased from 33.2 in 1961 to 33.6 per cent in 1971-72 in the selected villages. The percentage of workers actually engaged in agriculture increased

from 21.2 in 1961 to 24.6 in 1971-72.

The average farm size of the selected holdings marginally increased from 11.53 hectares in 1967-68 to 11.81 hectares in 1971-72. The percentage of owned land to operational holding size increased from 86.56 to 88.57 during the corresponding period. The cultivated area under ownership cultivation increased from 84.58 per cent in 1967-68 to 86.45 per cent in 1971-72.

Semi-dwarf wheats(HYV) occupied an important place in the cropping pattern of the selected holdings. The percentage of area under wheat(HYV) to the total cropped area increased from 15.03 in 1967-68 to 48.79 in 1971-72. The area under American cotton and paddy also increased. The area under wheat-gram, gram, barley and pulses, however, declined during this period.

The average family size of the selected holdings increased from 9.1 in 1967-68 to 10.7 in 1971-72. The proportion of adult males to total population increased from 29.67 in 1967-68 to 36.45 in 1971-72. The average number of male earners in agriculture increased from 2.2 in 1967-68 to 3.0 in 1971-72. The number of male earners in non-agricultural occupations also increased from 0.1 to 0.5 during the corresponding period. The percentage of students in graduate and post-graduate classes to total students increased from 3.51 in 1967-68 to 10.34 in 1971-72.

The average family size of the selected labour households came out to be 5.82 in 1971-72. The proportion of male adults to family size was 29.04 per cent. The average number of earners came to 1.80 in 1971-72. Agricultural labour was the main profession adopted by

88.89 per cent of the earners. About 7.22 and 3.89 per cent of the earners were engaged in service and livestock rearing. Of the 15 earners, who followed some occupation after 1967-68, 66.67 per cent adopted agricultural labour, 26.67 per cent service and 6.66 per cent livestock rearing. The proportion of students to total population was 5.73 in case of labour households.

The per holding value of farm family assets increased by 72.76 per cent from 1967-68 to 1971-72. This was mainly due to the appreciation in land values, following the introduction of high-yielding varieties of wheat. The per holding value of farm assets(excluding land) also increased from Rs 18923.19 in 1967-68 to Rs 30149.41 in 1971-72. The per hectare value of farm assets(excluding land) witnessed an increase of 12.07 per cent during the corresponding period.

The per holding value of household assets increased from 8121.83 in 1967-68 to Rs 11921.50 in 1971-72. The percentage growth in household assets came to 46.78 during the corresponding period. The relative importance of consumer durable goods to total farm family assets also increased during this period. This means, along with the development of infrastructure on the farm, farm families also increased their expenditure on items of social status in the recent years.

The per holding value of non-farm assets increased from Rs 233.33 in 1967-68 to Rs 1133.33 in 1971-72. The percentage value of this component to total farm family assets increased from 0.14 to 0.40 during the corresponding period. This was due to some investment in transport in 1971-72 by some of the selected farm families and indicated a tendency of farm families to make some marginal investment outside agriculture for supplementing their farm incomes.

The percentage share of financial assets to total farm family assets increased from 1.07 in 1967-68 to 1.34 in 1971-72. The per hectare value of financial assets increased from Rs 152.50 to 324.19 during the corresponding period. This was due to the agriculture becoming more capital intensive, which necessitated greater liquidity than before.

The percentage of financial liabilities to total farm family assets also increased from 0.24 in 1967-68 to 1.67 in 1971-72. The amount of financial liabilities per hectare increased from Rs 34.21 to Rs 401.95 during the corresponding period. The higher amount of financial liabilities in 1971-72, as compared to preceding years, arose from higher investment of farm families in the adoption of new technology, which led to an increase in borrowings, both from institutional as well as non-institutional sources.

The average value of household assets amounted to Rs 1422.87 and constituted 78.29 per cent of the total assets for labour households in 1971-72. The value of consumer durable goods accounted for 11.63 per cent of the total assets. The study showed that the labour households accumulated major proportion of the assets after the commencement of the high-yielding varieties programme.

The magnitude of financial assets per household for labour households was estimated at Rs 194.44, which accounted for 10.70 per cent of the total assets in 1971-72. The financial liabilities amounted to Rs 410.04, which accounted for 22.56 per cent of the total assets.

Average production expenditure increased from Rs 11586.90 in 1967-68 to Rs 18095.18 in 1971-72, which accounted for 56.17 per cent increase during the corresponding period. The per hectare expenses on

fertilizers, irrigation charges, hired labour and running expenses of farm machinery increased in 1971-72 over 1967-68. The expenses on these items increased for all the three farm size groups during the corresponding period. All this indicated the increased importance of the package of inputs and particularly the machinery input gaining in importance, owing to the adoption of high-yielding varieties. The magnitude of bullock labour, however, decreased in 1971-72, as compared to 1967-68, for the different sized holdings. It indicated the replacement of bullock labour by farm machinery.

The production expenditure elasticities increased from .0632 in 1967-68 to .2103, .4042 and .4960 in 1968-69, 1969-70 and 1971-72 respectively. The increasing elasticities indicated the rising trend in income, as a result of increases in production expenditure.

Average production expenditure was influenced by the increase in the number of earners in 1971-72. 'F' value came to 3.8520, which was significant at 5 per cent level.

The per holding farm business income witnessed an increase of 62.67 per cent from 1967-68 to 1971-72. The per hectare and per capita farm business income also increased from Rs 906.68 and 1301.12 in 1967-68 to Rs 1439.99 and 1616.98 in 1971-72.

The increase in income per holding came out to be 59.87 per cent from 1967-68 to 1971-72. The percentage increase in per hectare farm business income was 67.51 on large holdings and 35.19 and 43.31, on small and medium holdings respectively during the corresponding period. The higher relative increase in case of large holdings may be attributed to increase in intensity of cropping and development of value-oriented cropping patterns by 1971-72.

[illegible]

The concentration ratio both for per holding and per capita farm business income was, however, lower in 1971-72 than that of 1967-68. This might be attributed to the fact that the small and medium farmers had soon caught up with the large farmers in the matter of adoption of modern technology and this would have the effect of lowering the degree of concentration.

Average farm business income was influenced by the increase in the number of earners in 1969-70. 'F' value at 4.0479 was significant at 5 per cent level.

The average farm and non-farm income of the cultivating households was Rs 19088.92 in 1971-72. It increased from Rs 5947.70 in case of small holdings to Rs 13143.84 and 33281.91 for medium and large holdings respectively. The per capita income of the cultivating households amounted to Rs 1789.55 in 1971-72. It worked out to be Rs 686.27 for small holdings and Rs 1423.92 and 2473.65 for medium and large holdings respectively. Per household and per capita income of the labour households worked out to be Rs 2277.46 and Rs 391.17 respectively in 1971-72. Farm business income and agricultural labour occupied the predominant place in the total income of the cultivating and labour households respectively.

The per household and per capita total income of the cultivating households was higher than that of the labour households, mainly because of the component of farm business income. It indicated that the disparities in incomes arose mainly from disparity in ownership of the means of production.

The concentration ratio for per household income was higher (.43) for cultivating households than for labour households(.26). It came to .40 and .26 in case of per capita income for cultivating and

labour households respectively. The concentration ratio for per household and per capita income rose to .59 and .49 respectively for the total households(both cultivating and labour). There was, thus, uneven income distribution for cultivating households and, more so for the total households.

The study showed that the quantum of employment of the casual labour and the wage rates were positively associated. The increased employment in different months led to the increase in wage rates. However, the variation in employment over months was less than that in the wage rates. This was due to the increase in the intensity of cropping, following the introduction of high-yielding varieties of wheat, which gave a better spread of agricultural operations over the whole year. Again, the rise in money wages outweighed the increase in consumer price index number, leading to a rise of 15.60 per cent in the real wages from 1967-68 to 1971-72. This rise in real wage rate, coupled with the increased employment in different operations for HYV of wheat, led to the improvements in the economic condition of agricultural labour.

The production and marketed surplus of important crops increased in 1971-72 over 1967-68. The production of wheat (HYV) increased by 278.17 per cent, whereas the marketed surplus witnessed an increase of 362.85 per cent during the same period. The proportion of marketed surplus to total production increased from 62.77 in 1967-68 to 76.83 per cent in 1971-72. The production and its marketed proportion increased in t case of almost all the crops, over this period, for different sized holdings.

The increased production and marketed surplus paved the way for expanding transportation facilities from the village to the market. It also changed the relative importance of different modes of transportation.

The study showed that tractor-trolley transported 51.98 per cent of wheat (HYV) in 1967-68, which increased to 86.92 per cent in 1971-72. On the other hand, the use of bullock cart decreased during this period.

The total investment increased from Rs 4075.51 in 1967-68 to Rs 7609.95 in 1971-72, which gave 86.72 per cent increase during the corresponding period. Farm investment accounted for 96.84 and 81.77 per cent of the total investment in 1967-68 and 1971-72 respectively. Per hectare investment increased from Rs 342.19 in 1967-68 to Rs 526.76 in 1971-72. The investment in farm machinery and irrigation structure contributed 58.70, 44.19, 37.24 and 41.52 per cent of per hectare farm investment in 1967-68, 1968-69, 1969-70 and 1971-72 respectively. This highlighted the importance of investment in farm machinery and irrigation structure, subsequent to the introduction of high-yielding varieties. Whereas the large holdings made major investment in farm machinery and the purchase of land, small and medium holdings invested mostly in irrigation structure and the purchase of milch animals.

The percentage of investment in education to total investment increased from 3.16 in 1967-68 to 7.72 in 1971-72. The income elasticities of education increased from .0431 in 1967-68 to 1.5282 in 1971-72. The increasing elasticities indicated the higher relative response of investment in education as a result of shifts in farm business income.

Non-farm investment showed up for the first time in 1971-72. It was of the nature of investment in transport business and indicated the business attitude of farmers to make some investment outside agriculture. It was a pointer in the direction that with increased incomes in the coming years, the farmers might invest some amounts in the non-farm sectors of the seconomy.

The analysis showed that the effect of educational level of the head of the family was significant both in case of total investment and farm investment in 1967-68. The size of family influenced farm investment only in 1971-72.

The per household total investment of the labour households worked out to be Rs 49.82 in 1971-72. The investment in the purchase of milch animals accounted for 64.77 per cent of the total investment. The investment in education amounted to Rs 14.22, which accounted for 28.54 per cent of the total investment in 1971-72.

Average household expenditure increased from Rs 9044.31 in 1968-69 to Rs 12190.41 in 1971-72, which gave 34.79 per cent increase during the corresponding period. The proportion of expenditure on food items to total expenditure declined during this period. The percentage expenditure on non-food items to total expenditure, therefore, increased from 37.34 in 1968-69 to 46.44 in 1971-72.

The expenditure on socio-religious ceremonies increased in 1971-72 as compared to 1968-69. Its proportion to total expenditure increased from 11.38 in 1968-69 to 12.98 in 1971-72. This component occupied the first place in non-food items for all the years under study. This was indeed an irrational spending behaviour of cultivating households in the initial stages of development. Such unproductive expenditure should be reduced to the minimum and farm savings ploughed back for further improvement of farm organization and for building farm infrastructure.

Per capita household expenditure increased from Rs 962.17 in 1968-69 to 1142.85 in 1971-72. This was mainly due to the increase in expenditure on non-food items.

Income elasticities of per capita household expenditure increased from .0978 in 1968-69 to .3494 in 1971-72. The increasing elasticities indicated the higher relative response to household expenditure as a result of shifts in farm business income.

The size of family and number of earners were significant in influencing the household expenditure in 1969-70 and 1971-72 respectively.

Average household expenditure amounted to Rs 2204.90 in case of labour households and accounted for 96.81 per cent of the average income in 1971-72. It indicated that almost all the income of the labour households was spent as households expenditure.

The expenditure on food items accounted for 60.13 per cent of total expenditure. This proportion was almost equal to the proportion spent on food by the small holdings.

The expenditure on socio-religious ceremonies amounted to Rs 228.87, which accounted for 10.38 per cent of the total household expenditure. It indicated that the labour households also gave much importance to this item, inspite of their meagre incomes and low consumption levels.

Per capita household expenditure of the labour households worked out to be Rs 378.70 in 1971-72. The per capita expenditure even in the case of small cultivating holdings was more than twice of the labour households. It indicated that the consumption standard of the labour households was far below the level of the cultivating households. Per capita expenditure on cereals was also lower in case of labour households than that of the cultivating households. It pointed to the consumption of inferior quality of grains by the labour households.

The study showed that some of the selected labour households had to borrow funds for financing their household expenditure. These borrowings were mostly used for home consumption, socio-religious ceremonies and house construction etc. All this indicated that the labour households had to borrow even for home consumption, owing to their meagre incomes.

The study also highlighted some of the social aspects of HYV in the Punjab. The inequality in income distribution, consequent upon the introduction of high-yielding varieties had not resulted in social unrest in the rural areas of the Punjab. The continuity of social harmony was made possible by a cohesive social structure and less differentiation among various strata with respect to values and attitudes.

The study showed that both the high and low caste had a feeling that rigidity of the caste system was giving way to flexibility. The inter-dining between castes was also becoming common. The caste was not considered as a barrier, by a large proportion of the caste groups, to give education to or choose occupation for sons. The Jat as well as Harijans felt the importance of non-caste factors in determining social status. Again, in the leadership structure, all the castes emphasized secular qualities more than others.

The modernization of agricultural operations is creating new demands on such social services as transport, communications, supplies of modern inputs, etc. This would pave the way for a change in the traditional attitudes and value system of the farmers. Whereas the Punjab farmer is well known for his ruggedness and hard physical labour, the new technology compels him to devote more time to the managerial and entrepreneurial aspect of the farm business organization. Today, he

depends more on hired labour for performing hard physical tasks and himself prefers to do supervisory and entrepreneurial jobs.

The social tensions, in whatever form they are manifested, can hardly be attributed to the recent breakthrough, because similar happenings were common in the past too.

It can thus be concluded that in the rural society of Punjab, the narrowing gap between the different strata of population with respect to values, aspirations and attitudes has influenced continuity of a cohesive social structure. As a result, the recent income gap has not been able to create noticeable cleavage among groups.

A P P E N D I X

Appendix 2.1

Land Utilization in the Selected Villages 1966-67 through 1971-72

(in hectares)

Details	1966-67			1967-68			1968-69		
	Gill	Bhinder Kalan	Faqar-sar.	Gill	Bhinder Kalan	Faqar Sar.	Gill	Bhinder kalan.	Faqar sar.
Geographical area	773	1387	1562	773	1387	1562	773	1387	1562
Area not available for cultivation.	87 (11-25)	118 (8.51)	165 (10.56)	87 (11.25)	118 (8.51)	165 (10.56)	87 (11.25)	118 (8.51)	165 (10.56)
Other uncultivated area excluding fallow land	7 (0.91)	3 (0.21)	- -	6 (0.78)	2 (0.14)	- -	6 (0.78)	- -	- -
Fallow land.	8 (1.03)	- -	62 (3.97)	5 (0.65)	12 (0.87)	78 (4.99)	3 (0.39)	31 (2.24)	105 (6.72)
Net area sown	671 (86.81)	1266 (91.28)	1335 (85.47)	675 (87.32)	1255 (90.48)	1319 (84.45)	677 (87.58)	1238 (89.25)	1292 (82.72)
Area sown morethan once	222 (28.72)	569 (41.03)	183 (11.72)	235 (30.40)	582 (41.96)	378 (24.20)	255 (32.99)	623 (44.92)	587 (37.58)
Total cultivated area	679 (87.84)	1266 (91.28)	1397 (89.44)	680 (87.97)	1267 (91.35)	1397 (89.44)	680 (87.97)	1269 (91.49)	1397 (89.44)
Total cropped area	893	1835	1518	910	1837	1697	932	1861	1879

Note:- The figures in parentheses denote percentages to geographical area.

Appendix 2.1 (Contd)

Land Utilization in the Selected Villages
1966-67 through 1971-72.

(in hectares)

Details	1969-70			1970-71			1971-72		
	Gill	Bhinder kalan	Faqar sar	Gill	Bhinder kalan	Faqar sar	Gill	Bhinder kalan	Faqarsar
Geographical area	773	1387	1562	773	1387	1562	773	1387	1562
Area not available for cultivation.	87 (11.25)	118 (8.51)	165 (10.56)	87 (11.25)	118 (8.51)	165 (10.56)	87 (11.25)	118 (8.51)	165 (10.56)
Other uncultivated area excluding fallow land	6 (0.78)	- -	- -	3 (0.39)	- -	- -	2 (0.26)	- -	- -
Fallow land	3 (0.39)	25 (1.80)	55 (3.52)	3 (0.39)	25 (1.80)	42 (2.69)	3 (0.39)	21 (1.51)	24 (1.54)
Net area sown	677 (87.58)	1244 (89.69)	1342 (85.92)	680 (87.97)	1244 (89.69)	1355 (86.75)	681 (88.10)	1248 (89.98)	1373 (87.90)
Area sown morethan once	276 (35.71)	687 (49.53)	858 (54.93)	307 (39.72)	725 (52.27)	916 (58.64)	357 (46.18)	778 (56.09)	979 (62.68)
Total cultivated area	680 (87.97)	1269 (91.49)	1397 (89.44)	683 (88.36)	1269 (91.49)	1397 (89.44)	684 (88.49)	1269 (91.49)	1397 (89.44)
Total cropped area	953	1931	2200	987	1969	2271	1038	2026	2352

Note:- The figures in parentheses denote percentages to geographical area.

Appendix 2.2

Distribution of area Irrigated by Various Sources
1966-67 through 1971-72

Source	Gill						Bhinder Kalan						Fagarsar					
	1966-67	67-68	68-69	69-70	70-71	71-72	1966-67	67-68	68-69	69-70	70-71	71-72	1966-67	67-68	68-69	69-70	70-71	71-72
a) Canal																		
i) Area Irrigated	441	450	441	481	469	448	569	552	516	443	443	443	1288	1288	1288	1288	1288	1288
ii) Percentage of area irrigated	91.88	89.64	77.10	74.11	72.48	69.67	57.71	53.07	48.00	40.75	40.53	40.53	100.00	100.00	100.00	100.00	100.00	100.00
b) Wells																		
i) Area irrigated	-	-	-	-	-	-	336	253	162	44	27	22	-	-	-	-	-	-
ii) percentage of area irrigated	-	-	-	-	-	-	34.08	24.33	15.07	4.05	2.47	2.01	-	-	-	-	-	-
C) Tubewells/ Pumping sets																		
i) Area Irrigated	39	52	131	168	180	195	81	235	397	600	623	628	-	-	-	-	-	-
ii) Percentage of Area Irrigated	8.12	10.36	22.90	25.89	27.82	30.33	8.21	22.60	36.93	55.20	57.00	57.46	-	-	-	-	-	-
Net Area Irrigated (hectares)	480	502	572	649	649	643	986	1040	1075	1087	1093	1093	1288	1288	1288	1288	1288	1288
Percentage of irrigated area to net sown area.	71.54	74.37	84.49	95.86	95.44	94.42	77.88	82.87	86.83	87.38	87.86	87.58	96.48	97.65	99.69	95.98	95.06	93.81

Appendix 3.1

Size of the operational holding for different sized holdings, 1967-68, 1968-69, 1969-70 and 1971-72.

	1967-68			1968-69			1969-70			1971-72		
	Small	Medium	Large	Small	Medium	Large	Small	Medium	Large	Small	Medium	Large
Area owned	4.80	8.96	15.63	3.94	7.57	17.39	4.80	7.75	17.81	3.47	7.25	18.08
Area leased in	0.21	1.30	3.74	0.28	2.01	1.81	0.38	0.80	1.80	0.40	1.49	2.38
Area leased out	0.95	0.02	-	0.39	0.11	1.08	1.09	0.24	0.93	-	0.20	0.46
Operational area	4.06	10.24	19.37	3.83	9.47	18.12	4.09	8.31	18.68	3.87	8.54	20.00
Area owned and under self cultivation	3.85	8.94	15.63	3.55	7.46	16.31	3.71	7.51	16.88	3.47	7.05	17.62

Note:- Small:- Upto 6 hectares
Medium :- 6 to 14 hectares
Large:- 14 & above.

Appendix 3.2

Tenurial status of the different sized holdings
1967-68, 1968-69, 1969-70 and 1971-72

Year	Small				Medium				Large			
	Owner Cultivated		Owner-cum-tenant cultivated		Owner cultivated		Owner-cum-tenant cultivated		Owner Cultivated		Owner-cum-tenant cultivated	
	No. of holdings	Cultivated area	No. of Holdings	Cultivated area	No. of Holdings	Cultivated area	No. of Holdings	Cultivated area	No. of Holdings	Cultivated Area	No. of Holdings	Cultivated area
1967-68	5 (71.43)	21.24 (74.82)	2 (28.57)	7.15 (25.18)	10 (71.43)	102.84 (71.74)	4 (28.57)	40.51 (28.26)	5 (55.56)	99.67 (67.20)	4 (44.44)	74.59 (32.80)
1968.69	5 (71.43)	21.44 (79.88)	2 (28.57)	5.40 (20.12)	5 (35.71)	46.89 (35.34)	9 (64.29)	85.79 (64.66)	6 (66.67)	107.66 (66.02)	3 (33.33)	55.41 (33.98)
1969-70	6 (66.67)	23.79 (64.56)	3 (33.33)	13.06 (35.44)	8 (72.73)	62.27 (68.05)	3 (27.27)	29.23 (31.95)	7 (70.00)	133.90 (71.68)	3 (30.00)	52.90 (28.32)
1971-72	3 (50.00)	11.53 (49.57)	3 (50.00)	11.73 (50.43)	5 (38.46)	43.29 (38.94)	8 (61.54)	67.88 (61.06)	6 (54.55)	135.37 (61.55)	5 (45.45)	84.58 (38.45)

Appendix 11.1

A. Faction rivalry

Two factions originating from inter-family rivalry had existed in one village for the last ten years. One of them was led by the present Sarpanch, an M.L.A. and a rich farmer, while the other was led by another rich farmer of the village with political influence. Many of the group conflicts in this village could be traced to this faction rivalry. Some of the discrimination took the following form :

1. The big farmers of the village were favoured by the President of the Co-operative Society(Sarpanch) in the distribution of fertilizers.
2. One faction wanted to reduce wage rate of casual labour from Rs 5/- to Rs 4/- in 1972. But the other group continued to pay Rs 5/-.
3. One group purchased fans for the village Middle School, but the other group did not approve this expenditure and even doubted the price of fans paid by the other group.
4. One group in a study village decided to make a link road in the village but the other group opposed it as it was to pass through their agricultural fields.

B. Inheritance

1. In one study village, a brother murdered his step brother to have a full right on parental property.
2. Two married sisters of a farmer of one study village demanded their share in parental property. The farmer raised objection but his sisters won the case in the court.

C. Inter-personal

1. One of the farmers of the study village asked a labourer under the influence of liquor to do some work for him, but as the labourer refused to work, the farmer kicked and beat him.

2. A farmer of the village who is a father of three children was having illegal relation with a woman of nearby village. His wife raised many objections against it, but husband never cared for this and is still keeping that woman as his keep and this has created tension in the village.

3. One of the farmers in one village was going on a cart and another farmer of the same village coming on a cycle in the same direction. The latter asked the former why he blocked his way and fight started on that point. Both were injured badly.