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# CHAPTER VIII

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SIZE OF FARMS AND LEVELS OF INCOME

The analysis of the individual crop studies now logically leads to the determination of the efficiency of the total farm business on different size of farm units as influenced by the cropping pattern followed thereon.

Research worker have long recognised the shortcomings of the various measures of farm efficiency of the total farm business. However, the Indian Agricultural Economists have agreed in principle to adopt the following measures for analysing the internal organization of farms by grouping them into two broad categories :

1. Aggregate measures : Those expressed in terms of costs, returns and net income per farm and per hectare.
2. Ratio measures : Those expressed as financial test ratios in terms of gross ratio, fixed ratio and operating ratio.

Aggregate measures :

Costs and returns from crop production :

The levels of total input, output, net income, family labour income and farm business income from crop enterprises on per farm basis are given in table VIII-1.

Table VIII-1: Input, output, net income, family labour income and farm business income per farm (in rupees).

Size group in hectare	Input	Output	Net income	Family labour income	Farm business income	Input- output ratio
0 - 1	961.37	1388.02	426.65	589.43	614.99	1:1.44
1 - 2	3315.06	5010.12	1695.06	2163.36	2253.60	1:1.57
2 - 3	6064.82	9971.94	3907.12	4564.87	4733.99	1:1.64
3 and above	10913.41	17360.06	6446.65	7572.34	7876.47	1:1.59
Overall	7890.46	12585.82	4695.36	5541.56	5761.06	1:1.59

Table VIII-1, shows that input cost per farm varied from Rs. 961.37 on the lowest size group to Rs. 10913.41 on the largest size group of farms while the net income varied from Rs. 426.65 to Rs. 6446.65 per farm on the respective size groups. These rises in the values from lowest to largest size groups were due to larger area under cultivation. The average output and net income per farm came to Rs. 12585.82 and Rs. 4695.36, respectively, by making an average input of Rs. 7890.46.

Costs and returns per hectare on crop production :

The per hectare values of input, output, net income, family labour income and input-output ratio on crop production have been given in table VIII-2.

Table VIII-2 : Per hectare values of input, output, net income, family labour income and farm business income.  
( in rupees per hectare)

Size group in hectare	Input	Output	Net income	Family labour income	Farm business income	Input-output ratio
0 - 1	2002.85	2891.71	888.86	1227.98	1281.22	1:1.44
1 - 2	2210.04	3340.08	1130.04	1442.24	1502.40	1:1.51
2 - 3	2527.01	4154.97	1627.96	1902.03	1172.50	1:1.64
3 & above	2264.19	3601.67	1337.48	1571.03	1634.12	1:1.59
Overall	2310.29	3666.32	1356.03	1618.48	1682.50	1:1.59

Table VIII-2, reveals that the per hectare values of input output, net income, family labour income and farm business income showed a rise from the lowest size group upto 2-3 hectare after which they declined. These rises are associated with the better availability of irrigation water, higher investment on cash inputs

like high yielding varieties seeds, fertilizers, hired labour etc. and higher intensity of cropping. In the last size group of 3 and above hectare, the lower intensity of cropping due to lesser area under irrigation was responsible for lower net return per hectare than in the size group of 2-3 hectare. Similarly, input-output ratio rose from 1:1.44 on the lowest size group to 1:1.64 in 2-3 hectare size group.

The average values of input, output, net income, family labour income and farm business income came to Rs. 2310.29, 3666.32, 1356.03, 1618.48 and Rs. 1682.50, respectively.

Distribution of cost on input factors per hectare :

Human labour, bullock labour, seed manures and fertilizers, irrigation, rental value of land and over-head charges constituted the main items of input on crop production. The distribution of costs on these items under different size group of holdings has been worked <sup>out</sup> in table VIII-3.

Table VIII-3: Distribution of cost on input factors in crop production  
(in rupees per hectare)

Items of input	Size group in hectare				Overall
	0-1	1-2	2-3	3 & above	
Human labour	493.79 (24.65)	546.54 (24.73)	630.38 (24.95)	556.85 (24.59)	567.96 (24.58)
Bullock labour	388.21 (19.38)	387.35 (17.53)	413.90 (16.38)	369.88 (16.34)	387.97 (16.79)
Seed	170.53 (8.51)	199.38 (9.02)	247.73 (9.80)	231.05 (10.20)	221.66 (9.59)
Manures and fertilizers	226.50 (11.31)	295.49 (13.37)	328.79 (13.02)	279.49 (12.34)	291.70 (12.60)
Irrigation	131.54 (6.57)	166.52 (7.53)	200.91 (7.95)	174.46 (7.71)	175.42 (7.59)
Plant protection	2.96 (0.15)	6.55 (0.30)	11.85 (0.47)	9.47 (0.42)	8.74 (0.38)
Rental value of land	486.11 (24.27)	453.33 (20.51)	546.19 (21.61)	513.04 (22.66)	504.26 (21.83)
over-head cost	103.21 (5.15)	154.88 (7.00)	147.27 (5.83)	129.95 (5.74)	152.58 (6.50)
<b>Total</b>	<b>2002.85</b> (100.00)	<b>2210.04</b> (100.00)	<b>2527.01</b> (100.00)	<b>2264.19</b> (100.00)	<b>2310.29</b> (100.00)

Figures in parentheses denote percentage to the total cost.

The average cost of cultivation per hectare on sample farm rose from Rs. 2002.85 on lowest size group of 0-1 hectare to Rs. 2527.01 on 2-3 hectare size group of farms. This rise in total input cost was mainly due to higher intensity of cropping and higher investment on cash inputs made by the farmers of 2-3 hectare size group. The average input cost came to Rs. 2310.29 per hectare. The cost on items of input like human labour, bullock labour, seed, manures and fertilizers and irrigation, in general, showed an increasing trend with the increase in the size of farms.

The analysis of individual input cost reveals that the human labour cost accounted for the highest percentage, being 24.58 to the total cost followed by bullock labour (16.79 per cent) keeping rental value of land constant), manures and fertilizers (12.60 per cent), seed (9.59 per cent) and irrigation (7.59 per cent).

The rental value of land has been estimated on the basis of prevailing rates in the study area. On an average, it was worked out to Rs. 504.26 per hectare. Its share in the total cost came to 21.83 per cent. The over-head charges mainly included charges on account of depreciation, repairs and interest. This item, on an average, accounted for about 6.60 per cent to the total cost of cultivation.

#### Milk production :

#### Costs and returns on milk production per farm :

Keeping milch animal, both cows and buffaloes, in the farming community was a common practice in the study area. The costs incurred and income received from milk production on per

farm basis under various size group of holdings are given in table VIII-4.

Table VIII-4: Costs and returns on milk production per farm.  
(value in rupees)

Size group in hectare	Input	Output	Net income	Family labour income	Farm 'business 'income	'Input- 'output 'ratio
0 - 1	497.79	748.30	250.51	297.85	306.79	1:1.50
1 - 2	833.03	1325.54	492.51	620.70	639.41	1:1.59
2 - 3	1433.75	2367.16	933.41	1040.84	1072.13	1:1.65
3 & above	2142.36	3605.17	1462.81	1586.20	1633.77	1:1.68
<b>Overall</b>	<b>1658.23</b>	<b>2761.48</b>	<b>1103.25</b>	<b>1219.30</b>	<b>1255.89</b>	<b>1:1.66</b>

Table VIII-4, reveals that the milk production, on an average, yielded a net income of Rs. 1103.25 per farm with an average cost of Rs. 1658.23 and average output of Rs. 2761.48. The average values of family labour income and farm business income came to Rs. 1219.30 and Rs. 1255.89 per farm, respectively. These values, in general, showed an increasing trend with the increase in the size of farms mainly because of the fact that higher number of live-stock per farm was maintained on larger farms.

The average input-output ratio was worked out to 1:1.66 which rose from 1:1.50 on the smallest size group to 1:1.68 on the largest one because of relatively higher output per milch animal on larger farms.

The per hectare values of input, output, net income, family labour income and farm business income and input-output ratio from milk production have been worked out in table VIII-5.

Table VIII-5: Input, output and other details in respect of milk enterprises per hectare (in rupees).

Size group, in hectare,	Input	Output	Net income	Family labour income	Farm business income	Input- output ratio
0 - 1	1037.06	1558.96	521.90	620.52	639.15	1:1.50
1 - 2	555.35	883.69	328.34	413.85	426.27	1:1.59
2 - 3	597.40	986.32	388.92	433.68	446.72	1:1.65
3 & above	444.47	747.96	303.49	329.09	338.96	1:1.68
Overall	533.36	874.58	341.22	385.40	396.97	1:1.66

Table VIII-5, reveals that, on an average, a net income of Rs. 341.22 per hectare was received from milk production with an average cost of Rs. 533.36 and output of Rs. 874.58. The average values of family labour income and farm business income were calculated at Rs. 385.40 and Rs. 396.97 per hectare, respectively. As against per farm basis, the values of input, output, net income, family labour income and farm business income per hectare declined ~~at~~ the rise in the size of farms mainly because the farmers of larger size group did not maintain the number of milch animal in proportion to their cultivated area.

The overall average input-output ratio came to 1:1.66 with a some what increasing trend with the increase in the size of holdings.

Crop + milk enterprises (Pooled):

An analysis of the farm business as a whole (crop + milk production pooled together) in respect of input, output, net income, family labour income and farm business income per farm is given in table VIII-6.

Table VIII-6: Costs and returns on crop + milk production per farm.  
(in rupees)

Size group in hectare	Input	Output	Net income	Family labour income	Farm business income
0 - 1	1459.16	2136.32	677.16	887.28	921.78
1 - 2	4148.09	6335.66	2187.57	2784.14	2893.01
2 - 3	7498.57	12339.10	4840.53	5605.71	5806.12
3 & above	13055.77	20965.23	7909.46	9158.54	9510.24
Overall	9548.69	15347.30	5798.61	6781.33	7016.96

Table VIII-6, reveals that the combined crop + milk production, on an average, gave a net income of Rs. 5798.61 per farm with an average input of Rs. 9548.69 and output of Rs.15347.30. The average values of family labour income and farm business income were calculated at Rs. 6781.33 and Rs. 7016.96 per farm, respectively. These values, in general, tended to rise with the rise in the size of farms mainly because of larger size of farm business in respect of both (crop + milk production) on larger farms.

Costs and returns on crop + milk production per hectare :

The costs and returns on crop + milk production on per hectare basis have been presented in table VIII-7.

Table VIII-7: Costs and returns on crop + milk production per hectare  
(in rupees).

Size group in hectare,	Input	Output	Net income	Family labour income	Farm business income	Input- output ratio
0 - 1	3039.91	4450.67	1410.76	1848.50	1920.37	1:1.46
1 - 2	2765.39	4223.77	1458.38	1856.09	1928.67	1:1.53
2 - 3	3124.41	5141.29	2016.88	2335.71	2418.77	1:1.65
3 & above	2708.66	4349.63	1640.97	1900.12	1973.08	1:1.61
Overall	2843.65	4540.90	1697.25	2003.88	2079.36	1:1.60

PERCENTAGE CONTRIBUTION TO TOTAL VALUE  
OF FARM OUTPUT THROUGH CROP AND  
MILK ENTERPRISES

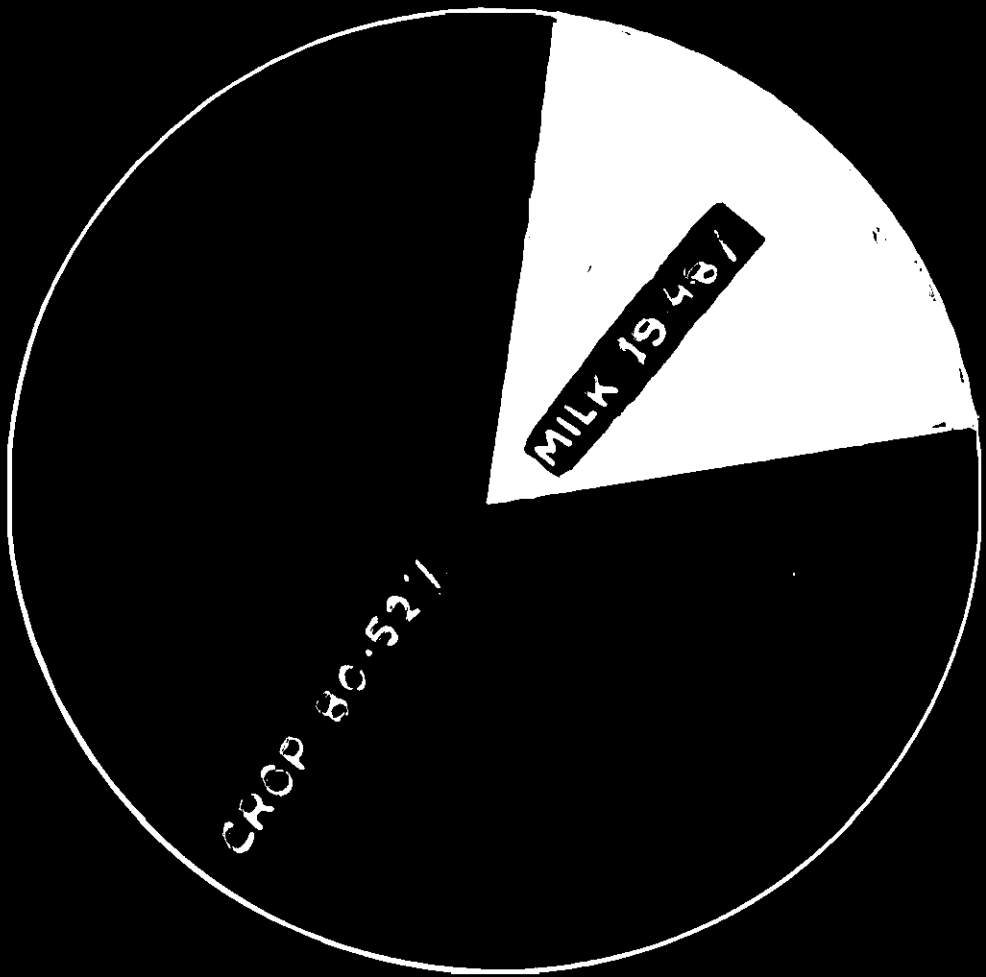


Table VIII-7, portrays that a net income of Rs. 1697.25 per hectare was received from crop and milk production pooled together with an average input of Rs. 2843.65 and output of Rs. 4540.90. The average values of family labour income and farm business income came to Rs. 2003.88 and Rs. 2079.36 per hectare, respectively.

Though, there was not a definite trend in case of input per hectare, the net income per hectare showed a rising trend with the rise in the size of farms mainly because of much higher output received from crop production on larger farms.

The average input-output ratio was worked out to 1:1.60 which showed an increasing trend with the increase in the size of farms because of relatively higher output received on larger farms.

Relative shares of crop and milk enterprises in total output and input:

The percentage contribution to total output and input from crop and milk enterprises on different size groups is given in table VIII-8.

Table VIII-8: Percentage contribution to total value of farm output through crop and milk enterprises.

Size group in hectare	Percentage share of total output		Percentage share of total input	
	Crop	Milk	Crop	Milk
0 - 1	64.97	35.03	65.89	34.11
1 - 2	79.08	20.92	79.92	20.08
2 - 3	80.82	19.18	80.88	19.12
3 & above	82.80	17.20	81.51	18.49
Average	80.52	19.48	82.15	18.85

Table VIII-8, indicates that, as compared to the share of costs incurred, i.e. input, crop enterprises make a larger

relative contribution to the total output. It is examined that, in general, the farms in the area following the present level of production technology, in crop and milk production, have a better comparative advantage in crop production. The small farmers have better earnings through milk production. The higher contribution of milk enterprises to the total output of smaller farms is expressed by the reason that although the number of milch animal per farm was smaller on them as compared to larger holdings, yet, because of the number of milch animal per hectare was relatively larger on smaller holdings.

Utilization of human labour on crop and milk production:

The utilization of human labour in crop production, maintenance of draft cattle and milch animal on per farm and per hectare basis under different size group of holdings have been calculated in table VIII-9.

Table VIII-9: Utilization of human labour hour per farm per hectare

Particulars	Size group in hectare				Overall
	0-1	1-2	2-3	3 & above	
<u>Per farm:</u>					
Crop production	474.04	1639.60	3025.82	5368.03	3893.78
Maintenance of draft cattle	111.79	232.04	323.80	477.18	378.14
Upkeep of milch animal	322.08	462.05	803.00	1241.54	952.08
<u>Total</u>	<u>907.91</u>	<u>2333.69</u>	<u>4152.62</u>	<u>7086.75</u>	<u>5224.00</u>
<u>Per hectare:</u>					
Crop production	987.58 (52.21)	1093.07 (70.26)	1260.76 (72.86)	1113.70 (75.75)	1142.12 (72.50)
maintenance of draft cattle	232.90 (12.32)	154.69 (9.94)	134.92 (7.80)	99.00 (6.73)	124.44 (7.91)
upkeep of milch animal	671.00 (35.47)	308.03 (19.80)	334.58 (19.34)	257.58 (17.52)	307.46 (19.53)
<u>Total</u>	<u>1891.48</u> (100.00)	<u>1555.79</u> (100.00)	<u>1730.26</u> (100.00)	<u>1470.28</u> (100.00)	<u>1574.02</u> (100.00)

• Significant at 5.0 per cent level

$r = -0.7761^*$

Table VIII-9, reveals that the per farm average utilization of human labour units came to 5224 hours. It was 3894 units on crop production, 378 on maintenance of draft cattle and 952 on upkeep of milch animal. On per hectare basis, the total utilization of human labour units stood at 1574 units, out of which 1142 units were utilized on crop production, 124 on maintenance of draft cattle and 307 units on upkeep of milch animal. In terms of percentage, on an average, 72.56, 7.91 and 19.53 per cent of the total labour utilized were used in crop production, maintenance of draft cattle and upkeep of milch animal, respectively.

The size group wise utilization of labour shows that the labour units on crop production on per hectare basis increases with the increase in the size of holdings upto 2-3 hectare size group and declined afterwards. This increasing trend in per hectare labour utilization was associated with the increase in the intensity of cropping and percentage area under high yielding crop varieties which also increased upto 2-3 hectare size group and had declined afterwards. The labour utilization on maintenance of draft cattle and upkeep of milch animal per hectare showed a reverse trend, i.e. it decreases with the increase in the size of holdings, the reason being that the farmers of larger size groups did not maintain the number of draft and milch animals in proportion to their size of farms.

#### Utilization of family and hired labour :

The break-up of labour utilization into family and hired labour units has been presented in table VIII-10.

Table VIII-10: Utilization of family and hired labour per farm and per hectare (in hours).

Size group, in hectare,	'Utilization of labour hour per farm			'Utilization of labour hour per hectare		
	Family	Hired	Total	Family	Hired	Total
0 - 1	837.28	70.63	907.91	1744.33 (92.22)	147.15 (7.78)	1891.48 (100.00)
1 - 2	1932.79	400.89	2333.68	1285.53 (82.82)	267.26 (17.18)	1555.79 (100.00)
2 - 3	2716.27	1436.35	4152.62	1131.78 (65.41)	598.48 (34.59)	1730.26 (100.00)
3 & above	3872.39	3214.36	7086.75	803.40 (54.64)	666.88 (45.36)	1470.28 (100.00)
Average	3096.20	2127.80	5224.00	1017.26 (64.63)	556.76 (35.37)	1574.02 (100.00)

$$r = -0.9503^*$$

$$r = +0.8978^*$$

\* significant at 5.0 per cent level.

Table VIII-10, shows that out of an average 5224 hours utilization of human labour per farm, the family labour accounted for 3096.20 hours and hired labour 2127.80 hours. Both of these figures showed an increasing trend with the increase in the size of holdings because of the larger size of farm business of larger farms.

Of the total average utilization of 1574 hours per hectare family labour contributed for 1017.26 hours, being 64.63 per cent and that of hired labour 556.76 hours accounting for 35.37 per cent to the total labour utilization per hectare. The utilization of family labour was highest on smallest size group of holdings and decreased with the increase in the size of holdings while just a reverse trend was noticed in case of hired labour utilization. The main reason for this trend was that the cultivators of small

size group of holdings try to complete their farm operations in time with the help of their family members only while large sized farmers generally depend on hired labour for completing their farm operations in time.

Further, due to poor investment capacity of the small farmers, their pocket generally do not allow them to employ hired labour. On the other hand, the cultivators of higher size group of holdings, due to larger average area under cultivation are bound to employ hired labour in order to complete their farm operations in time as family labour falls short with them as compared to their size of holdings.

Share of family and hired labour in crop production and maintenance of draft and milch animals.

Table VIII-11, presents an account of the utilization of family and hired labour in crop production and maintenance of draft and milch animals.

Table VIII-11: Family and hired labour hours in crop production and upkeep of animals.

Particulars	Size group in hectare				Average
	0-1	1-2	2-3	3 & above	
<u>Family labour hours:</u>					
Crop production	840.43	825.81	662.28	446.82	585.36
Upkeep of animals	903.90	462.72	469.50	356.58	431.90
Total	1744.33	1288.53	1131.78	803.40	1017.26
<u>Hired labour hours:</u>					
Crop production	147.15	267.26	598.48	666.88	556.76
Upkeep of animals	-	-	-	-	-
Total	147.15	267.26	598.48	666.88	556.76
<u>Totals:</u>					
Crop production	987.58	1093.07	1260.76	1113.70	1142.12
Upkeep of animals	903.90	462.72	469.50	356.58	431.90
Total	1891.48	1555.79	1730.26	1470.28	1574.02

The percentage fraction of family labour and hired labour in crop production has been worked out in table VIII-12.

Table VIII-12: Percentage share of family and hired labour in crop production.

Size group in hectare	Percentage share of family and hired labour in crop production	
	Family labour	Hired labour
0 - 1	85.10	14.90
1 - 2	75.55	24.45
2 - 3	52.53	47.47
3 & above	40.12	59.88
Overall	51.48	48.52

The percentage share of family labour to total labour used in crop production declined from 85.10 to 40.12 from smallest size group to largest one. On an average, the percentage share of family and hired labour came to 51.48 and 48.52, respectively to the total <sup>human labour</sup> used in crop production.

Utilization of family labour to total availability of family labour:

The family labour utilization to the total availability of family labour under different size group of holdings is given in table VIII-13. <sup>k</sup>Three hundred days, i.e. 2,400 hours have been treated as the available working hours per farm worker.

Table VIII-13: Utilization of family labour to the total availability of family labour.

Size group in hectare	'Family labour hrs' available	'Family labour hrs' utilized on farm	'Family labour hrs' un-utilized
0 - 1	3600.00	837.28 (23.26)	2762.72 (76.74)
1 - 2	4080.00	1932.79 (47.37)	2147.21 (52.63)
2 - 3	5040.00	2716.27 (53.89)	2323.73 (46.11)
3 & above	5760.00	3872.39 (67.23)	1887.61 (32.77)
Average	5185.57	3096.20 (59.71)	2089.36 (40.29)

Figures in parentheses denote percentage to total.

It may be seen from table VIII-13, that the utilization of family labour was only 59.71 per cent to the total availability of family labour. The rest of the family labour of about 40.00 per cent could not be utilized. The per farm utilization of family labour to its total availability varied from 23.26 per cent on the smallest size group to 67.23 per cent on the largest size group.

#### Employment of draft cattle :

The utilization of bullock labourhours, assuming a total availability per pair per year to be 300 days of eight hours, has been worked out in table VIII-14.

Table VIII-14: Utilization of bullock labour hours.

Size group in hectare	Bullock pair labour hours				
	Per farm			Per hectare	
	Available	Utilized	'Utilization' 'of bullock' 'labour unit' 'to total' 'availibi- 'lity in percentage	Available	Utilized
0 - 1	1272.00	124.20	9.77	2650.00	258.79
1 - 2	2316.00	387.35	16.72	1544.00	258.23
2 - 3	3120.00	662.24	21.23	1300.00	275.93
3 & above	4632.00	1188.54	25.66	961.00	246.58
Average	3684.65	865.09	22.22	1232.61	256.77

The average utilization of bullock pair labour hours per hectare came to 256.77 hours in a year. The utilization of bullock labour was better on larger farms due to larger acreage commanded against available supply on the farm and higher intensity of cropping as farms increased in size upto 3 hectare size group.

#### Maintenance cost of draft cattle :

The maintenance cost includes expenses on fodder ,

concentrates, labour charges on their upkeep, salt, gur, housing, over-head cost and other miscellaneous charges such as ropes, shoeing and medical care etc. The value of dung and income earned from hiring out <sup>have been</sup> ~~have been~~ deducted from the total cost of maintenance to arrive at net maintenance cost. The net maintenance cost of bullocks, thus, worked out when divided by the number of bullock pair labour days actually worked, gives the working cost per pair of bullocks per day.

The maintenance and working costs per pair of bullocks and distribution of maintenance cost over different items, i.e. fodder, concentrates, labour charges on upkeep and over-head cost etc. are given in table VIII-15.

Table VIII-15 : Maintenance and working cost (in rupees) per pair of bullock.

Particulars	Size group in hectare				Average
	0-1	1-2	2-3	3 & above	
Fodder	585.92 (60.42)	640.72 (58.98)	672.34 (57.23)	684.22 (54.54)	668.89 (56.15)
Concentrates	91.44 (9.44)	121.55 (11.18)	158.05 (13.46)	194.32 (15.50)	167.62 (14.06)
Labour charges on upkeep	106.47 (10.98)	120.23 (11.06)	124.54 (10.6)	123.95 (9.88)	122.58 (10.28)
Salt, gur, rope, medicine etc.	35.33 (3.65)	43.87 (4.05)	47.70 (4.06)	52.63 (4.20)	49.07 (4.13)
Over-head cost	150.45 (15.51)	160.11 (14.73)	172.12 (14.65)	199.28 (15.88)	183.25 (15.38)
Total cost	969.61 (100.00)	1086.48 (100.00)	1174.75 (100.00)	1254.40 (100.00)	1191.38 (100.00)
Receipt (Dung and hiring out)	202.50	153.38	121.25	82.36	110.35
Net maintenance cost	767.11	933.10	1053.50	1172.04	1081.03
Average maintenance cost per day/pair	2.10	2.85	2.88	3.21	2.95
Number of bullock pair labour hrs. worked	290.12	510.45	686.44	904.17	751.13
Working cost per bullock pair/day	21.12	14.56	12.24	10.32	12.07
Working cost per bullock pair/hr.	2.64	1.82	1.53	1.29	1.50

Table VIII-15, reveals that, on an average, the total cost per year on maintenance of a pair of bullocks came to Rs. 1191.38. This item tended to increase from Rs. 969.61 on 0-1 hectare size group to Rs. 1254.40 on the highest size group. On overall basis, fodder accounted for 56.15 per cent to the total maintenance cost. The fraction of total cost on fodder gradually declined from 60.42 per cent in smallest size group to 54.54 per cent in the highest one. The next largest item was over-head cost, claiming about 15.38 per cent to the total cost which when expressed as a fraction of total cost steadily increased from 14.65 per cent on 2-3 hectare size group to 15.88 per cent in the highest size group. Concentrates, on the whole, accounted for 14.06 per cent. It rose from 9.44 per cent in the smallest size group to 15.50 per cent in the highest one. Labour charges varied from 11.06 per cent on 1-2 hectare size group to 9.88 per cent on the highest one to the total maintenance cost of a pair of bullock.

The maintenance cost, on the whole, increased with the increase in farm size as the larger farms maintained relatively better quality and larger sized bullocks and fed and maintained them more carefully.

The correlation coefficient between size of holding and maintenance cost per pair of bullocks came to 0.9521 which was positive and significant at 5.0 per cent level, showing thereby that maintenance cost per pair of bullocks increases with the increase in the size of farms.

The correlation coefficient between number of bullocks pair labour hours worked and the working cost per bullock pair labour hour was calculated at -0.9572 which was found to be

negative and significant at 5.0 per cent level. Thus, it may be concluded that as the number of bullock hour worked increased, the working cost per pair of bullock labour hour decreases.

Return per labour day :

The return earned by the cultivators and their family members for their work on the holdings has been worked out in table VIII-16. This has been obtained by dividing the family labour income by the number of labour days put in by the family members.

Table VIII-16 : Return per family labour day.

Size group in hectare	Number of family labour days	Total family labour income (in rupees)	Return per family labour days (in rupees)
0 - 1	104.66	887.28	8.48
1 - 2	241.60	2784.14	11.52
2 - 3	339.53	5605.71	15.51
3 & above	484.05	9158.54	18.92
Overall	387.02	6760.87	17.47

The return per labour day of family members increases with the increase in the size of farms. It rose from Rs. 8.48 on the smallest size group to Rs. 18.92 on the largest one. The family labour earnings will rise or decline with corresponding shifts in family labour employment.

Return to capital in use :

Percentage return to capital investment :

Percentage return to capital investment has been obtained by dividing the difference between the annual value of output and the annual cost on account of all input factors (including land

but excluding interest on capital) by the total values of fixed assets including land and then multiplying it by 100.

Table VIII-17: Percentage return to capital investment per farm.  
(in rupees).

Size group in hectare	Total value of fixed assets	Return to fixed assets	Average percent return to capital
0 - 1	6364.61	696.98	10.95
1 - 2	20369.72	2280.50	11.20
2 - 3	33636.58	4981.91	14.81
3 & above	63600.93	8160.00	12.83
Average	45749.33	5982.94	13.08

The average return to capital investment came to 13.08 per cent. It may be seen from table VIII-17, that these figures increases with the increase in the size of holdings upto 2-3 hectare size group and declined afterwards. It was due to higher returns accompanied by higher intensity of cropping and percentage area under high yielding varieties of crops in the corresponding size group of holdings.

Capital turn over :

Output per rupee invested is known as capital turn over. It has been obtained by dividing the output by total investment (fixed + working capital) and has been shown in table VIII-18.

Table VIII-18 : Capital turn over.

Size group in hectare	Total capital invest- ment (fixed and opera- ting capital)	Value of output	Capital turn over percentage
0 - 1	7823.77	2136.32	27.31
1 - 2	24517.81	6335.66	25.84
2 - 3	41135.15	12339.10	30.00
3 & above	76656.70	20965.23	27.35
Average	55298.02	15347.30	27.75

The average capital turn over came to 27.75 per cent. It varied from 25.84 per cent to 30.00 per cent under different size group of holdings due to variations in the output values obtained in the corresponding size group of holdings. Farming is a business of low capital turn over. In it the investments are higher in proportion to the output.

Ratio measures :

Financial test ratios :

In addition to return to capital investment and capital turn over, other financial test ratios, i.e. gross ratio, fixed ratio and operating ratio which have importance for producing keys to the needed information on capital use, returns and guiding in decision making on investment alternatives, have been worked out in table VIII-19.

Table VIII-19 : Financial test ratios.

Size group in hectare	'Capital turnover' ratio	'Gross ratio'	'Fixed ratio'	'Operating ratio'
0 - 1	0.27	0.68	0.32	0.21
1 - 2	0.26	0.65	0.29	0.24
2 - 3	0.30	0.61	0.21	0.26
3 & above	0.27	0.62	0.26	0.23
Average	0.28	0.63	0.25	0.24

Table VIII-19, reveals that the gross return per rupee invested is highest on 2 <sup>to</sup> and 3 hectare size groups (30.0 per cent) due to higher investment on improved seeds, fertilizers and irrigation structure while it is more or less same in other size groups.

While applying other financial test ratios to the farming

business, it is clear that the investment per rupee of gross revenue decreases as the size of holding increases.

Management return :

Management return is obtained by subtracting the imputed value of family labour and interest on equity capital from net income per hectare. It is used to compare the managerial abilities of different farms. The same has been worked out and is given in table VIII-20.

Table VIII-20 : Management returns in rupees per hectare.

<u>Size group in hectare</u>	<u>Management return in rupees</u>
0 - 1	901.12
1 - 2	988.09
2 - 3	1614.56
3 and above	1308.77
<b>Average</b>	<b>1314.99</b>

On 2-3 hectare size group of farms, the operational efficiency and managerial ability were better than other farms as the return to management was highest (Rs. 1614.56 per hectare) followed by the largest size group where it came to Rs. 1308.77. The lowest management return of Rs. 901.12 per hectare was obtained on the smallest size group. It is revealed from the above table that the managerial skill increases with the increase in the size of farms due to better socio-economic conditions in relation to education, more frequent urban touch and better extension assistance.

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