CHAPTER III

Operation Flood - Its Impacts

3.1 INTRODUCTION

This chapter is devoted to analysing the impact of Operation Flood-I on milk production, its disposal, its cost of production and level and distribution of income generated from milk and employment generated in the selected villages. The analysis is based on the 'with and without' principle whereby the observed differences between the values of selected variables for the cooperative and control villages are attributed to the activities initiated under Operation Flood I (OF-I) in the cooperative villages. Due to lack of strict comparability between the cooperative and control villages and in the absence of information about the villages at the beginning of OF-I, the changes in the cooperative villages cannot wholly be attributed to OF-I. However, it is believed that a major proportion of the observed differences can be explained in terms of the activities launched under OF-I. The parameters of change studies were determined by the data available from field surveys and published reports of the National Dairy Development Board and Indian Dairy Corporation.

3.2 Land holding & possession of milch animals

It is important to set together the main parameters of land holding, production and number of milch animals. Tables 3.1, 3.2 & 3.3 show the distribution of land and milch animals by land holding size classes in Guntur, Surat and Bhopal villages.

The tables reveal that though the land and animal distributions were uneven, the animal holdings were more evenly distributed than

TABLE 3.1

Distribution of land and milch animals according to size of land holding classes in Guntur

Land holding size classes	Co-operative village(Krishnayapalam)			Control Village(Abbarayupalem)			Control village (Dondapadu)		
	% of house holds	% of land	% of milch animals	% of house-holds	% of land	% of milch animals	% of house holds	% of land	% of milch animals
Landless	14.15	0.0	6.7	43.33	0.9	8.9	21.51	0.0	18.1
0-2.5 acres	27.53	8.02	28.4	12.00	3.30	11.3	14.25	2.30	11.3
2.5-5 acres	14.89	5.18	15.2	10.67	19.46	30.2	14.24	3.77	24.1
5-10 acres	12.87	18.75	19.5	17.33	13.55	27.4	18.48	13.41	19.6
Above 10 acres	30.56	30.02	68.06	16.67	63.69	22.2	31.52	80.53	26.9
BASE	396	415	1551	150	287	170	330	1508	325

TABLE 3.2

Distribution of land and milch animals according to size of land holding classes in Surat

Land holding size classes	Cooperative village (Anawal)			Control village (Sunvalla)		
	% of households	% of land	% of milch animals	% of households	% of land	% of milch animals
Landless	35	0.0	20.3	13.02	0.0	5.1
0-2.5	13	12.02	26.07	15.81	9.23	16.9
2.5-5 acres	21	18.14	22.3	10.23	15.13	15.3
5-10 acres	20	30.33	19.00	33.02	29.40	33.3
above 10 acres	11	39.5	11.7	27.91	46.23	29.4
BASE	638	2284	2214	215	907	274

Distribution of land and milch animals according to size of land holding classes in Bhopal

Land holding size classes	Co-operative village (Khaikheda)			Control village (Charnal)		
	% of house-holds	% of land	% of milch animals	% of house holds	% of land	% of milch animals
Landless	12	0.0	6.7	7.03	0.0	7.7
0-2.5 acres	25	7.6	8.7	6.25	5.3	8.9
2.5-5 acres	24	11.0	28.9	14.84	10.00	21.3
5-10 acres	19	17.7	26.1	32.42	32.4	28.1
above 10 acres	20	63.7	29.6	39.45	52.3	34.0
BASE	186	2383	208	256	3252	165

the land holdings in both the cooperative and the control villages in all three districts. This seems apparent from the fact that the lower categories including the landless own a considerably greater proportion of animals than they do of land. The share of the bottom two classes of households in the total number of milch animals was more than that in all the villages. There was no uniform pattern of distribution of milch animals in the cooperative and control villages. The distribution was more uneven in the Bhopal control village, less uneven in the Guntur control village and almost similar in the Surat Villages. The less uneven distribution of milch animals compared with that of land is a desirable characteristic in so far as it will tend to ensure a more equitable distribution of benefits from dairy development programme. A shift towards possessing of greater number of cattle in case of marginal and landless farmers would mean that they are likely to benefit more from dairy development than from agriculture.

Thus it will be seen from the above analysis that the marginal and small farmers appear to be able to consolidate their asset base by increasing the number of cattle possessed by them. They have generally been able to increase their possession of milk cattle from 1 to 2. While the landless and intermediary categories of farmers are only able to maintain the cattle they already possess (one and two respectively), the large farmers are able to increase their possession of cattle. The explanation for this is that in the organised dairying pattern under which they are covered, there is no provision for loan facilities. In fact organised dairying

has discouraged societies from giving loans to farmers to acquire cattle. The organised dairying pattern, as it is today, believes that the farmers must be able to get a remunerative price for their milk which in turn must help them to maintain and acquire cattle. This may be true in respect of large farmers. The marginal and small farmers with land providing them with some fodder and income are able to get the best advantage out of their land and are able to consolidate their gains in dairying. This explains their ability to add to their possession of cattle. On the contrary the landless have no other productive source of income. By better concentration in dairying and greater income due to remunerative prices, they are no doubt able to improve their income through dairying and thereby their total income.

3.3 Possession of Cattle & Composition of Milch Herd

The basic resource for dairying is milch cattle. Therefore the possession of milch animals gives the farmers control over the productive resources. Table 3.4, 3.5 and 3.6 indicate data on the proportion of households having milch animals, total and average number of milch animals, composition of milch herd and average milk production per household for the villages of Guntur, Surat and Bhopal districts respectively. Estimates for the landed and landless households are presented separately. Milch animals are defined as female bovine (cows and buffaloes) animals over three years of age. Milk production estimates relate to the month preceding the date of interview (Dec.81/Feb.82) with the sample milk producers.

As can be seen from the tables, the pair of villages in Surat and Bhopal was fairly comparable in terms of proportion ofhouseholds having milch animals, but in Surat the cooperative villages had a

TABLE 3.4

MILCH ANIMALS AND MILK PRODUCTION IN GUNTUR VILLAGES

Particulars	Co-operative Village Krishnayapalam			Control village (Abbarajupalam)			Control village (Dondapadu)		
	Land Owners	Landless	Total	Land owners	Land less	Total	Land owners	Land less	Total
1. Total No. of house-holds	340 (85-85)	56 (14-15)	396 (100)	85 (56-57)	65 (43-33)	150 (100)	259 (78.5)	71 (21.51)	330 (100)
2. % house-holds with milch animals	63.78	41	60.55	63.34	13.82	41.87	55.14	14.78	46.45
3. No. of milch animals)									
Dry	170	11	181	59	4	63	142	7	149
In milk	190	19	209	78	9	87	147	9	156
Total	360	30	390	137	13	150	289	16	305
4. % No. of milch animals per hh.									
Dry	.78	0.47	0.75	1.09	.44	1.00	.99	.67	0.97
In milk	.87	. 83	0.87	1.45	1.00	1.38	1.03	.85	1.01
Total	1.66	1.30	1.62	2.54	1.44	2.38	2.02	1.52	1.98
5. Av.milk production last month(L/hh)	146.11	147.16	146.21	89.11	73.00	86.81	91.76	78.15	90.82
6. Av.Milk production last month (L/hh/milch animal in milk)	167.94	177.3	168.05	61.45	73.00	62.90	89.08	91.94	89.92

Figures in parenthesis indicate percentages.

TABLE 3.5

Milch animals and Milk Production in Surat Village in Feb.82

Particulars	Co-operative village(Anawal) Land owners	Land less	Total	Control village(Sunvalla) Land owners	Land less	Total
1. Total No. of households	415 (65)	223 (35)	638 (100)	187 (86-98)	28 (13.00)	215 (100)
2. % households with milch animals	99	41	78.72	55.62	32	52.53
3. No. of milch animals						
- Dry	963	45	1008	106	11	117
-In milk	1142	50	1192	130	3	133
-Total	2105	95	2200	236	14	250
4. Av.No. of milch animals per h.h						
- dry	2.34	.49	2.01	1.11	.98	1.04
-In milk	2.78	.54	2.37	1.15	.58	1.17
-Total	5.12	1.03	4.38	2.26	1.56	2.21
5. Av.milk Production last month (L/hh)	452.86	96.55	388.00	136.27	57.07	129.99
6. Av.milk production last month(L/hh/milch animal in milk	162.90	178.80	163.71	118.50	98.4	111.10

FIGURES IN PARENTHESIS INDICATE PERCENTAGES

TABLE 3.6

Milch animals and milk production in Bhopal village

Particulars	Cooperative village(Khaikhed)			Control village(Charnal)		
	Land owners	Land less	Total	Land owners	Land less	Total
1. Total no. of households	164 *(88)	22 (12)	186 (100)	238 (93)	18 (7)	256 (100)
2. % households with milch animals	62.71	57.31	62.02	59	31	57.01
3. No. of milch animals						
- Dry	85	6	91	65	4	69
- In milk	96	7	103	78	3	81
-Total	181	13	194	143	7	150
4. Av.number of milch animals per hh.						
-Dry	0.82	.48	.79	.34	.54	.48
-In milk	.93	.55	.89	.70	.71	.55
-Total	1.76	1.03	1.68	1.01	1.25	1.03
5. Average milk production last month (L/hh)	125.27	79.69	120.28	68.49	67.73	68.46
6. Average milk Production last month (L/hh) milch animal in milk	134.7	144.90	135.15	97.85	95.4	124.7

* Figures in parenthesis indicate percentages.

substantially higher proportion of households having milch animals, than the control village. In terms of average number of milch animals per household, the cooperative villages in Surat & Bhopal had more milch animals per household than the control village.

Tables 3.4, 3.5 and 3.6 also contain data on the composition of milch herd in terms of animals in milk and animals dry (not in milk) in Guntur, Surat and Bhopal villages. It was hypothesised that organised dairying has economically benefitted all categories of farmers in increasing their income owing to year round assured market and remunerative price for milk in the cooperative villages and that this would provide sufficient economic incentives to the milk producers to alter the composition of their milch herds over time by increasing the proportion of animals in milk to total number of milch animals. A comparative study of the income earned through dairying by all categories of farmers particularly in Guntur and Surat districts, where the programme had been in operation for a sufficiently long time to generate strong economic stimuli, support this hypothesis.

3.4 Milk Production & Milk Yield per Animal

Over the last 30 years, India's Annual Milk Production more than doubled from 17.41 million tonnes in 1951 to 42.3 million tonnes in 1985-86. Milk and milk products are the second largest contributor to the gross agricultural output. The gross value of output of milk and its products at current prices has almost trebled during the last decade. This study attempted to assess the nature

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of the factors which have brought about the marked improvement in the productivity per milk animal. At the village level Operation Flood was intended to help producers increase their milk yields per milch animal through better feeding, health care and cross/pure breeding. The results of the study are briefly described below :-

3.5 Guntur Villages

Table 3.4 indicates the average milk production per household in the cooperative & control villages in Guntur. It was found that milk production was 69% higher in the co-operative village as compared to that in the Abbarajupalem (control) village and 61% higher as compared to that in the Dondapadu (control) village. The reason for poor milk production in the control villages could be attributed to the absence of a regular market as a result of which farmers are not motivated to increase milk production by adopting proper animal health measures. About 50% of the farmers in the control villages do not sell milk at all. The others sell surplus milk at prices ranging between Rs.2.25-2.50 per litre to vendors as compared to a price of Rs.3.50 in the co-operative village. Similarly the average milk production per milch animal in milk in the cooperative village was substantially higher (i.e. by 167% and 88%) than in the control villages. Equally significant is the fact that the average milk yield per milch animal in milk was not only higher in the case of the landless when compared to the landed groups in the cooperative village but also when compared to their counterparts in the control villages.

3.6 Surat Villages

The data on milk production collected from the respondents in the project area of Surat District reveals that the average milk production in the co-operative village was 200% more than in the control villages (Table 3.5). In the co-operative village the average milk production per milch animal in milk was about 10% higher in the case of the landless groups when compared to the landed groups in the same village. The difference was as high as 82% when compared to their counterparts in the control village. In Sunvalla village owing to the absence of a proper and regular market only 40% of the producers sold surplus milk to vendors and that too at a low price of Rs.2.50 as compared to prices ranging from Rs.3.25-3.75 offered to producers in the co-operative village. The poor performance in the control village could be attributed to lack of economic incentives to milk producers.

3.7 Bhopal Villages

Table 3.6 indicates that the average milk production in the co-operative village was 83.5% higher in the case of land owners and 18% higher in the control village. In the co-operative village the average milk production per milch animal in milk was 7.6% higher in the case of landless producers in the same village and 52% higher when compared to their counterparts in the control village. In the charnal (control) village no milk was sold for want of a proper market as a result of which scant attention was paid to milk production.

The results above suggest that dairying has emerged as an important source of income for the small and marginal farmers in

the regions where organized dairying has been able to make a break through. The contribution of the rural weaker sections to the total milk production increased after organized dairying became effective. When the milk production per household is viewed, the landless fare poorly as they own lesser number of animals. It is natural that the higher land-owning groups particularly those with 5 to 10 acres and 10 acres and above should have more animals per household since they can grow more fodder and can afford more concentrated feed. However, when we look at the yield per animal, the highest yield per animal comes from the landless (except in case of Bhopal). The Indian Institute of Public Opinion 1983-84 survey has also indicated this fact. This indicates that special attention is bestowed on the fewer animals that the landless and marginal farmers possess. Very often they have just one milch animal, so, obviously, it receives greater care than do the animals belonging to the affluent categories. Thus although, in absolute terms, the richer farmers may benefit more due to their command over resources, in relative terms the poorer farmers as a class benefit more from modern dairying of Operation Flood. In other words modern dairying is scale neutral and the rich farmers do not benefit more than the poor farmers in relative terms.

There is also significant difference between members and non-members. This suggests that it is not just individual care in the smaller unit household which contributes to higher milk yields, but equally significant is the clear improvement owing to better animal health care resulting from greater use of veterinary services supplied by co-operative unions.

It was further revealed that the adoption of modern dairying practices is more or less scale-neutral. Irrespective of the size of the holding, all the respondents have reported the use of veterinary services, Artificial Insemination and so. The distribution of milch animals is less skewed than that of land and, therefore, the concentration of increased income from modern dairying will be of a smaller magnitude. Moreover, the marketed surplus of milk by the weaker sections have a larger proportionate share in the milk marketed in the 'cooperative' villages.

3.8 Pattern of Milk Disposal, price realized and gross revenue

Tables 3.7, 3.8 and 3.9 present data on the pattern of disposal of milk, average producer's price realized and gross revenue from milk and milk products in Guntur, Surat and Bhopal villages respectively. There are described below :-

3.9 Guntur Villages

In the Guntur village 80% of the milk produced in the cooperative village was sold as compared with 60% in the control village. Of the total milk sold in the cooperative village, the dairy co-operative accounted for 77% and the other sources for the remaining 23%. The average value of milk sold per household in the co-operative village indicating a difference of 206% and 190%. These price differences could be attributed to the existence of the dairy cooperative in the cooperative village which ensures a guaranteed market and fair price. The average gross revenue from milk products per household in the cooperative

TABLE 3.7

Milk disposal, price realized and gross cash income in Guntur Villages (Jan. 82)

articulars	Cooperative villages (Krishnajayapalem) Land owners	Land Less	Total	Control villages Land owners	Land less	Total	Control villages Land owners	Land less	Total
. Av.milk production (L/hh)	146.11	147.16	146.21	89.11	73.00	86.81	91.76	78.15	90.80
. Liquid milk sold to (L/hh)									
-Cooperative	90.00	91.31	90.12	0	0	0	0	0	0
-Others	27.26	25.37	27.08	54.00	42.12	52.39	56	40.76	54.96
-Total	117.26	116.76	117.21	54.00	42.12	52.30	56	40.76	54.96
. Av.liquid milk retained(L/hh)	28.85	30.40	29.00	35.00	30.88	34.41	35.76	37.39	35.87
. Percent liquid milk sold to produced	80.31	79 .42	80.22	60.59	57.69	60.18	61.02	52.15	60.41
. Value of liquid milk sold to (Rs./hh)									
-Cooperative	306	310.45	306.43	0	0	0	0	0	0
-Others	92.68	86.26	92.06	135	105	130.71	140	101.9	137.39
-Total	398.68	396.71	398.49	135	105	130.71	140	101.9	137.39
. Av.price realized (Rs./L)	3.40	3.40	3.40	2.50	2.50	2.50	2.50	2.50	2.50
. Sale value of milk products (Rs./hh)	38.41	39.00	38.47	4.78	4.37	4.72	5.15	4.15	5.08
. Gross cash income from milk & milk products(Rs./hh)	437.09	435.71	436.96	139.78	109.37	135.44	145.15	106.05	142.4
. Gross cash income per milch animal in milk (rs/hh)	502.40	524.95	504.54	96.4	109.37	98.26	140.92	124.76	139.81

TABLE 3.8

Milk disposal, price realized and gross cash income in Surat Villages (Jan.82)

Particulars	Co-operative villages (Anawal)			Control village (Sunvalla)		
	Land-owners	Land less	Total	Land-owners	Land less	Total
1. Av.milk production (L/hh)	452.86	96.55	388.00	136.27	57.07	129.99
2. Liquid milk sold to (L/hh)						
-Cooperatives	403.75	74.25	343.77	0	0	0
-Others	3.25	1.00	2.84	84.77	30.57	80.47
-Total	407.00	75.25	346.61	84.77	30.57	80.47
3. Average liquid milk retained(L/hh)	45.84	31.30	41.37	51.50	26.50	49.52
4. Percent liquid milk sold to producers	90.04	78.38	87.92	62.33	53.63	61.64
5. Value of liquid milk sold to(Rs/hh)						
-Cooperatives	1413.12	259.87	1203.19	.0	0	0
-Others	9.25	3.25	8.16	211.92	76.43	201.17
-Total	1422.37	263.12	1211.35	211.92	76.43	201.17
6. Average price realized(Rs./L)	3.50	3.50	3.50	2.50	2.50	2.50
7. Sale value of milk products(Rs./hh)	26.73	3.60	22.52	12.63	0	11.63
8. Gross cash income from milk & milk products(Rs./hh)	1449.1	266.72	1233.87	224.55	76.43	212.80
9. Gross cash income per milch animal in milk(Rs./hh)	521.26	493.93	516.29	195.26	131.77	190.22

TABLE 3.9

Milk disposal, price realized and gross cash income in Bhopal villages (Nov.81)

Particulars	Cooperative village (Khaikheda)			Control village (Charnal)		
	Land owners	Land less	Total	Land owners	Land less	Total
1. Average milk production (L/hh)	125.27	79.69	120.28	68.49	67.73	68.46
2. Av.liquid milk sold to (L/hh)						
-Cooperatives	63.00	54.29	62.05	0	0	0
-Others	0	0	0	0	0	0
-Total	63.00	54.29	62.05	0	0	0
3. Liquid milk retained (L/hh)	62.27	25.40	58.25	68.49	67.73	68.46
4. Percent liquid milk sold to produced	50.40	68.72	52.40	0	0	0
5. Value of liquid milk sold to(Rs./hh)						
-Cooperatives	163.80	141.15	161.33	0	0	0
-Others	0	0	0	0	0	0
-Total	163.8	141.15	161.33	0	0	0
6. Average price realized (Rs./L)	2.60	2.60	2.60	0	0	0
7. Sale value of milk products (Rs./hh)	8.33	0	7.42	16.39	0	15.76
8. Gross cash income from milk & milk products(Rs./hh)	172.13	141.15	168.75	23.41	0	22.52
9. Gross cash income per milch animal in milk(Rs./hh)	185.08	256.63	192.89	23.41	0	22.52

village was Rs.38 as compared with Rs.4.72 and Rs.5.08 in the control villages. The average gross cash income per milch animal in milk was Rs.504 in the cooperative village which was 260% and 410% higher than in the control villages.

It is significant to note that in the cooperative village the animal distribution was more even among land owners and the landless households the average number being 1.66 and 1.30 per household respectively. Thus the proportion of milk produced and sold were more or less the same. The landless groups produced more milk per milch animal as seems to be apparent from the data. Their gross cash income per milch animal in milk was about 5% higher when compared to the landed groups in the same village.

When compared to the control villages it was found that the total liquid milk sold in the cooperative village was 115-125% higher. This was because the dairy cooperative offered prices which were about 36% higher thus providing an incentive to producers to produce more. Consequently the gross cash income from milk and milk products per household was about 200-214% higher in the cooperative village raising the gross cash income per milch animal in milk by 262 and 414% respectively. The excellent performance in the cooperative village could be attributed to the higher milk yield and higher milk price.

3.10 Surat Villages

In the Surat co-operative village the land owners owned five times more animals than the landless, thus their average milk production was

also about 5 times more enabling them to sell a greater proportion (90%). Of the total quantity of liquid milk sold almost all the quantity was sold to the dairy cooperative by both the groups. In the control village only 61% of the liquid milk was sold as compared with 88% in the cooperative village. The value realized by the control village was also about 36% less. Thus the gross cash income from milk and milk products obtained by households in the cooperative village was about 482% higher than in the control village. The gross cash income per milch animal in milk was about 172% higher in the co-operative village. This was because of higher proportion of milk sold, and higher price of milk realized by households in the cooperative village.

3.11 Bhopal Villages

In the Bhopal cooperative village surplus milk was sold only to the dairy cooperative at a price of about Rs.2.60 per litre. In the control village there was absolutely no sale of milk whatsoever owing to the absence of a regular market. Thus whatever milk is produced is consumed by the households or converted into ghee mostly for their own consumption. It is significant to note that the average milk production was about 76% higher in the cooperative village than in the control village. Thus the households in the cooperative village were able to sell about 52% of the total milk produced to the dairy cooperative. In Bhopal milk retention for household consumption is quite high when compared to Guntur and Surat where the per capita consumption is comparatively low. The gross cash income from milk and milk products was about 665% higher

in the cooperative village. In the cooperative village the gross cash income per milch animal in milk was about 39% higher in the case of the landless household when compared with the land owners. This shows that the landless households in the co-operative village were able to increase their milk yields more than the landed households.

3.12 Cost and contribution of milk production

Great efforts are being made by the organized dairy sector to provide cheap but superior balanced cattle feed to producers on no profit no loss basis. This study has shown a very high rate of adaptability of such technical inputs by the landless, marginal and small farmers. These inputs have proved to be both cost saving and productivity boosting. The strategy of Operation Flood has been to improve the returns of the producers by minimising the cost through technology and expanding the market share.

Tables 3.10, 3.11 and 3.12 indicate details of the relevant cost and contribution of milk production in Guntur, Surat and Bhopal. In computing the relevant cost, the cost of farm produced feed stuff and the cost of family labour used in keeping milch animals and in grazing them were not considered. The average contribution per milch animal in milk is the best measure of economic efficiency in milk production.[2] In terms of this measure the cooperative villages in all the three milkshed districts were better off than the corresponding control villages. The average relevant cost of milk production per litre in the cooperative villages was considerably higher than in the control villages.

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TABLE 3.10

Relevant cost & contributions of milk production in Guntur Villages

Particulars	Co-operative villages			Control villages		
	Land owners	Land less	Total	Land owners	Land less	Total
1. Av.price received (Rs/L	3.40	3.40	3.40	2.50	2.50	2.50
2. Relevant cost of production	1.37	1.30	1.36	.97	.67	.84
3. Contribution (1-2((Rs/L)	2.03	2.1	2.04	1.53	1.83	1.66
4. Contribution (Rs./day)	9.87	10.29	9.93	4.54	4.45	4.45
5. Contribution (Rs./animal in milk)	5.95	7.91	6.13	1.78	3.09	2.02

* Relevant cost is the out of pocket expenses incurred on milk production.

TABLE 3.11

Relevant cost & contribution of milk production in SURAT VILLAGES

Particulars	Cooperative village(Anawal)			Control village(Sunvalla		
	Land owners	Land less	Total	Land owners	Land less	Total
1. Av.price received (Rs/L)	3.50	3.50	3.50	2.50	2.50	2.50
2. Relevant cost* of production	1.46	.85	1.24	1.00	.35	.92
3. Contribution (1-2)(Rs./L)	2.04	2.65	2.26	1.50	2.15	1.58
4. Contribution (Rs./day)	98.53	23.56	92.95	11.22	5.46	11.20
5. Contribution (Rs/animal in milk)	19.24	22.87	21.22	4.96	3.5	5.07

*Relevant cost is the out of pocket expenses incurred on milk production.

TABLE 3.12

Relevant cost & contribution of milk production in Bhopal villages

Particulars	Cooperative village (Khaikheda)			Control village (Sunavalla)		
	Land owners	Land less	Total	Land owners	Land less	Total
1. Av.price received (Rs./L)	2.60	2.60	2.60	0	0	0
2. Relevant cost* of production	.99	.58	.94	0	0	0
3. Contribution (1-2)(Rs./L)	1.61	2.02	1.66	0	0	0
4. Contribution (Rs./day)	9.24	9.51	9.35	0	0	0
5. Contribution (Rs/animal in milk)	5.25	9.23	5.57	0	0	0

*Relevant cost is the out of pocket expenses incurred on milk production.

The landless household in the cooperative villages in all the three districts fared better in terms of contribution per milch animal in milk than compared to their counterparts in the control village. Compared to the landed groups in their own village also they were better off. A study conducted by the Indian Institute of Public opinion states that "if we look at the yield per animal in 1984 survey comes from the 'landless'. It is worth noticing that in 1977-78 survey the average daily milk production of the landless was much less than at present i.e. 2.39 litres against 3.17 litres. Comparatively the yields in all categories and particularly the landless and small farmers appear to have risen substantially between 1977-84".

The average contribution from milk over the relevant cost per litre in the Guntur co operative village was about 23% higher and in the Surat village 43% higher. As there was no sale of milk in the Bhopal control village, comparison in terms of percentage is not possible .

The average contribution per day in the cooperative village was about 123% higher in Guntur and about 730% in Surat.

In the Guntur co operative village the average contribution per milch animal in milk was about 203% higher and in the Surat cooperative village it was about 318% higher.