

Chapter - VII

Economic Impact of 'AMUL' & 'HIMUL' On The Rural Development

Dairying is one of the most effective instrument of supplementing farmer's income and generating employment in the rural sector. Dairying requires one million Rupees to create an employment potential of 290 persons- years as against 120-200 persons- years for crop production¹.

"Dairy animals, comprising of cows and buffaloes, are the major livestock and hold a very important place in the national economy. Apart from their role in milk production, they contribute a huge quantity of organic manure, which is one of the major inputs in our agriculture.

Dairy farming is also very important subsidiary occupation.

It provides employment to millions of unemployed and

under-employed, and particularly to small farmers, marginal farmers and landless labourers in villages. In view of these benefits, and the facts that dairy animals being ruminants, can utilize rough ages, dairy farming should complement and supplement the production of food and fibre in the country and not compete with it"². To improve socio-economic conditions of village-based population in India, a sizeable portion of which is living below poverty line³. Dairying has been chosen by the Government of India as a compatible means. Besides, dairying is a labour intensive economic activity and has the potential of generating cash income for people in rural areas⁴. A question can be reasonably, asked at this juncture-what can Dairy Co-operative contribute in the Programme of Dairy Development ?

To review the impact of the dairy co-operatives of Amul & Himul on rural development in the area concerned, 150 households of different groups are taken from the 6 dairy villages and 2 non-dairy villages of the area of Himul by stratified Random Sampling⁵ and compare these results with the similar results of the area of Amul which was done earlier by S.M.Patel and M.K.Pandey of Institute of Co-operative Management, Ahmedabad, Gujrat. Of these, 3 dairy and 1 non-dairy villages are taken from each of the plains and the hills in Himul as the areas of Himul cover both the hills and plains. The technique of sampling used here has

been followed in the foots-steps of S.M.Patel and M.K. Panday. We have followed their technique of sampling simply to make a comparison between Himul and Amul.

LAND HOLDING :

TABLE 7.1

Land Holding Pattern of Sample Households of Amul & Himul

Holding Pattern	No. of households			
1. Weaker Section : 12 dairy vills 4 non-dairy vills.				
A. Landless households	A 22	H 22	A 8	H 21
B. Small farmers (0.1 to 2.0 hec.)	53	55	16	25
2. Stronger Section :				
C. Medium farmers (2.1 to 4.0 hec.)	13	15	18	3
D. Big farmers (4.1 to above hec.)	12	8	8	1
Total	100	100	50	50

Note : A denotes Amul and H denotes Himul.

A sample analysis of land holding in hinterland of Amul and Himul discloses that in dairy villages a large

number of households belong to the weaker section. Percentage of medium farmers are almost the same in both areas of Amul and Himul. The difference is only of 2%. But the percentage of big farmers is higher in Amul against Himul. Whereas in non dairy villages the percentage of weaker section and stronger section is almost the same in Amul. But it is different in Himul. Here, a large number of households belong to the weaker section. Only 8% of the households belong to the stronger section.

TABLE 7.2

Land Holding Pattern of Sample Households of Plains & Hills of Himul

Holding Pattern	No. of Households			
	6 Dairy Villages		2 non-dairy vills.	
	P	M	P	M
1. Weaker Section :				
A. Landless households	6	16	9	12
B. Small farmers : (0.1 to 2.0 hec.)	27	28	14	11
2. Stronger Section:				
C. Medium farmers : (2.1 to 4.0 hec.)	10	5	2	1
D. Big farmers : (4.1 to above hec.)	7	1	0	1
Total	50	50	25	25

Note : P denotes plains and M denotes hills.

But when discussed in respect of the hills and plains of Himui, it becomes clear that a large number of households belong to the weaker section in all respects.

In dairy villages percentage of small farmers is almost the same. The difference is meagre (2 percent). A large number of sample households in hills in dairy villages have no land. In dairy villages the stronger section of the sample households in hills is far behind the plains. In non-dairy villages of the hills near about half of the sample households belong to the landless group. Again, in dairy and non-dairy villages comparatively the stronger section of non-dairy villages is lagging behind the stronger section of the dairy villages. However, it may be clear that in dairy and non-dairy villages land holding pattern of the plain is much better than that of hills.

DISTRIBUTION OF MILCH ANIMALS :

"Most of the cultivating households, irrespective of the size of their land-holdings, own some milch animals or the other. Cattle rearing continues to be an integral part of Indian agricultural scene. These animals can easily be maintained on the crop residues, on weeds and green grass collected by the landless, etc."⁶. And the

milk production is the subsidiary income of the farmers in dairy villages as well as non-dairy villages. A sample survey of households and the number of milch animals disclose (Table 7.3) that,

TABLE 7.3

Milch Bovine Distribution Pattern of Sample Households of Amul and Himul

Group (Holding Pattern)*	Milch bovine distribution								Total no. of households rearing milch animals	
	0		1		2		3+			
	A	H	A	H	A	H	A	H	A	H
DAIRY VILLAGES										
A	1	-	18	14	3	5	-	3	21	22
B	4	1	28	16	20	25	1	13	49	54
C	-	-	4	3	8	3	1	9	13	15
D	-	-	3	-	5	1	4	7	12	8
Total	5	1	53	33	36	34	6	32	95	99
NON-DAIRY VILLAGES										
A	-	11	6	4	1	6	1	-	8	10
B	1	8	7	14	7	1	1	2	15	17
C	1	2	8	1	5	-	4	-	17	1
D	-	-	1	1	6	-	1	-	8	1
Total	2	21	22	20	19	7	7	2	48	29

* Vide Table 7.1

In Amul the number of households keeping one milch bovine is highest in both dairy and non-dairy villages. And the number of households keeping two milch bovines is the second. Whereas in case of Himul the number of households keeping one, two or above milch bovines are almost the same in dairy villages. But in non dairy villages the number of households keeping only one milch bovine is the highest. It is to be noted that 42% of the total households of non-dairy villages of Himul keep no milch bovine and most of them are landless households. However, in Amul most of the households i.e. 95 percent and 96 percent in dairy villages and non-dairy villages respectively, have atleast one milch bovine. In Himul, 99 percent of the sample households of dairy villages have one or more milch bovine but in non-dairy villages, this percentage is only 58. Besides in Amul and Himul in both the situations the number of households keeping one or above milch animals belong to the weaker section.

The Table 7.4 discloses that in hills, all the sample households of dairy villages are keeping atleast one milch animal, but in case of plains 2 percent of the total sample households in dairy villages are not keeping any milch animals. Whereas in non-dairy villages in hills only 40 percent of the total households are keeping milch animals. In plains the position in this respect is much

TABLE 7.4

Milch Bovine Distribution Pattern of Sample Households of
Plains and Hills of Himul

Group (Hold- ing Pattern)	Milch bovine distribution								Total no. of households rearing milch animals	
	0		1		2		3+		P	M
	P	M	P	M	P	M	P	M		
Dairy Villages										
A	-	-	6	8	-	5	-	3	6	16
B	1	-	6	10	13	12	7	6	26	28
C	-	-	1	2	3	-	6	3	10	5
D	-	-	-	-	1	-	6	1	7	1
Total	1	-	13	20	17	17	19	13	49	50
Non-dairy Villages										
A	3	8	1	3	5	1	-	-	6	4
B	2	6	10	4	1	-	1	1	12	5
C	1	1	1	-	-	-	-	-	1	-
D	-	-	-	1	-	-	-	-	-	1
Total	6	15	12	8	6	1	1	1	19	10

better than that in the hills i.e. 76 percent. In plains number of milch bovine keeping by the households of dairy villages is gradually increasing. But in the hills this

figure is gradually decreasing. In both dairy and non-dairy villages the maximum number of households, those who are keeping one milch bovine or more, are belonging to the weaker section.

TYPES OF MILCH ANIMALS :

Table 7.5 shows the number of different types of milch animals kept by the sample households.

In both Amul and Himul, goats are not kept by the households in general in dairy villages. And it is also remarkable that in Amul, buffaloes are kept in general and in Himul Cows are kept in general by the sample households in both dairy and non-dairy villages with a few exceptions. In dairy villages in Himul average number of milch animals per family is higher than that of Amul but in non dairy villages it is higher in Amul. The average number of milch animals (buffaloes/cows) per family rises with rise in the size of landholding in both dairy and non-dairy villages with the exception in non-dairy villages of Himul. It is observed in Amul, on an average a household keep in dairy and non-dairy villages 1.5 and 1.6 units of milch buffaloes respectively; but in Himul, a household in the dairy and in the non-dairy villages own 2.2 and 0.8 units of cows respectively.

TABLE 7.5

Number and Different type of Milch Animals woned by the Sample Households

Group (Holding Pattern)	No. of milch animals woned						Average No. of milch buffalo/ cow per family	
	Cows		Buffaloes		Goats		A	H
	A	H	A	H	A	H		
Dairy Villages								
A	-	34	24	-	-	-	1.1	1.5
B	2	108	71	-	-	-	1.3	1.9
C	-	44	24	-	-	-	1.8	2.9
D	-	36	29	3	-	-	2.4	5.1
Total	2	222	148	3	-	-	1.5	2.2
Non-Dairy Villages								
A	1	17	12	-	-	12	1.5	0.8
B	-	23	24	-	1	11	1.5	0.9
C	4	1	28	-	15	3	1.6	0.3
D	-	1	16	-	2	-	2.0	1.0
Total	5	42	80	-	18	26	1.6	0.8

Considering all the groups together, there is no remarkable difference between dairy and non-dairy villages in Amul but in Himul it is comparable difference.

TABLE 7.6

Number and Different types of Milch Animals owned by the Sample Households in Plains and Hills of Himul

Groups (Holding Pattern)	No. of milch animals owned						Average No. of milch buffalo/ cows per family	
	Cows		Buffaloes		Goats		P	M
	P	M	P	M	P	M		
Dairy Villages								
A	6	28	-	-	-	-	1.0	1.7
B	54	54	-	-	-	-	2.0	1.9
C	31	13	-	-	-	-	3.1	2.6
D	31	5	3	-	-	-	4.8	5.0
Total	122	100	3	-	-	-	2.5	2.0
Non-dairy Villages								
A	11	6	-	-	-	12	1.2	0.5
B	16	7	-	-	-	11	1.1	0.6
C	1	-	-	-	-	3	0.5	-
D	-	1	-	-	-	-	-	1.0
Total	28	14	-	-	-	26	1.1	0.6

In both dairy and non-dairy villages the average number of milch animals per family in the Plains is higher

than those in hills. It is also remarkable that the average number of milch animals per family increases with the increase in the size of landholding in both the situations except in non-dairy villages of the Plains where the reverse happens. The difference between the average number of milch animals per family of dairy and non-dairy villages in Plains is more than the difference between the average number of milch animals per family of dairy and non-dairy villages in hills.

PERCENTAGE OF WET AND DRY MILCH ANIMALS :

The quantity of milk production depends mainly upon what types of milch animals are kept and what are the percentages of the Wet and the Dry milch animals in the sample villages. The picture of percentage of Wet and Dry milch animals with each group is given in Table 7.7.

In Amul and Himul the percentage of Wet animals is higher than that of the percentage of Dry animals in both the situations i.e. dairy and non-dairy villages. The weaker section of the sample households has highest percentage of Wet animals in Amul and Himul in dairy

TABLE 7.7

Percentage of Wet and Dry milch animals with each group
of Amul and Himul

Group (Holding Pattern)	Percentage of buffaloes or cows			
	Wet		Dry	
	A	H	A	H
Dairy Villages				
A	75	59	25	41
B	72	68	28	32
C	58	59	42	41
D	65	53	35	47
Total	69	62	31	38
Non-dairy Villages				
A	72	53	28	47
B	62	52	38	48
C	64	100	36	00
D	50	100	50	00
Total	62	55	38	45

villages. But in non dairy villages this picture is reverse with the exception of Amul.

TABLE 7.8

Percentage of Wet and Dry Milch Animals With Each Group
of Plains and Hills of Himul

Group (Holding Pattern)	Percentage of buffaloes or cows			
	Wet		Dry	
	P	M	P	M
Dairy Villages				
A	50	60	50	40
B	55	80	45	20
C	71	31	29	69
D	51	60	49	40
Total	58	67	42	33
Non-dairy Villages				
A	36	83	64	17
B	37	86	63	14
C	100	-	-	-
D	-	100	-	-
Total	39	86	61	14

Further in hills of Himul the percentage of Wet animals is higher than that of percentage of Dry animals

in both the situations. But in Plains of Himul, that percentage is higher only in dairy villages. In hills, the weaker section of the sample households have the highest percentage of wet animals in dairy and non-dairy villages, whereas in the Plains, this picture is different in both the situations.

PRODUCTION OF MILK :

Table 7.9 represents the data of dairy milk production by different size group of sample households as well as the milk production of different types of milch animals. The above table depicts that in Amul 99.4 percent of the total milk production and in Himul 98.2 percent of the total milk production are contributed by buffaloes and cows respectively in Dairy villages. In non-dairy villages same percent of the total milk production in Himul and 92.8 percent of the total milk production in Amul are contributed by cows and buffaloes respectively. Only 0.6 percent and 7.2 percent of the total milk production are produced by cows and goats in Dairy and non-dairy villages of Amul. And in Himul only 1.8 percent of the total milk is produced by buffaloes in Dairy villages. Thus it is quite apparent that the existing pattern of milk production is perfectly based on cow and buffalo rearing in Himul and in Amul respectively.

TABLE 7.9

Milk Production by Sample Households (Per Day)

Group (Holding Pattern)	Production of milk by each group in litres per day							
	Buffaloes		Cows		Goats		Total	
	A	H	A	H	A	H	A	H
Dairy Villages								
A	129.0 (19.90)	-	-	61.5 (22.28)	-	-	129.0	61.5
B	311.0 (47.95)	-	4.0 (100.0)	157.0 (56.89)	-	-	315.0	157.0
C	89.5 (13.80)	-	-	32.5 (11.77)	-	-	89.5	32.5
D	119.0 (18.35)	3 (100.0)	-	25.0 (9.06)	-	-	119.0	28.0
Total	648.5 (100.0)	3 (100.0)	4.0 (100.0)	276.0 (100.0)	-	-	652.5	279.0
Non-Dairy Villages								
A	40.5 (16.63)	-	3.5 (29.17)	28.0 (58.95)	-	-	44.0	28.0
B	73.5 (30.19)	-	-	18.5 (38.94)	-	-	73.5	18.5
C	89.0 (36.55)	-	8.5 (70.83)	1.0 (2.10)	6.0 (85.71)	-	103.5	1.0
D	40.5 (16.63)	-	-	-	1.0 (14.29)	-	41.5	-
Total	243.5 (100.0)	-	12.0 (100.0)	47.5 (100.0)	7.0 (100.0)	-	262.5	47.5

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In both Himul and Amul, major portion of the total milk production of sample households in dairy villages is contributed by small farmers. The weaker section which constituted 7.7 per cent in Himul and 7.5 per cent in Amul of the total sample households in dairy villages produces almost 78 percent and 68 percent of the total milk respectively. Here, contribution of the weaker section according to its strength of mass is almost the same in Himul but in Amul it is 7 percent less than their strength of mass in dairy villages.

However, in non-dairy villages, the weaker section constituted 46 percent in Himul and 43 percent in Amul of the sample households produced almost 100 percent and 47 percent of the total milk respectively. Only in non-dairy villages of Amul, the proportion of different groups of households indicates a nice relationship with their production of milk. It is clear that in both the situation of Amul and Himul, the weaker section is the potential factor of milk production and this is so specially in Himul.

The daily milk production by the sample households in plains and hills of Himul (table 7.10) shows that, the biggest producers of milk in both the plains and hills in dairy villages are small farmers. But in non-dairy villages the biggest milk producers belong to small farmers group in plains and landless households in hills.

TABLE 7.10
Milk Production by Sample Households (Per Day) of Plains
& Hills of Himul

Group (Holding Pattern)	Production of milk by each group in litres per day							
	Cows		Buffaloes		Goats		Total	
	P	M	P	M	P	M	P	M
Dairy Villages								
A	3.0 (4.25)	58.5 (28.46)	-	-	-	-	3.0	58.5
B	35.0 (49.64)	122.0 (59.36)	-	-	-	-	35.0	122.0
C	17.5 (24.82)	15.0 (7.30)	-	-	-	-	17.5	15.0
D	15.0 (21.29)	10.0 (4.88)	3 (100.00)	-	-	-	18.0	10.0
Total	70.5 (100.00)	205.5 (100.00)	3 (100.00)	-	-	-	73.5	205.5
Non-Dairy Villages								
A	10.0 (44.44)	18.0 (72.00)	-	-	-	-	10.0	18.0
B	11.5 (51.11)	7.0 (28.00)	-	-	-	-	11.5	7.0
C	1.0 (4.45)	-	-	-	-	-	1.0	-
D	-	-	-	-	-	-	-	-
Total	22.5 (100.00)	25.0 (100.00)	-	-	-	-	22.5	25.0

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However, in both plains and hills and in both the situations the weaker section as a whole produces maximum quantity of milk. But according to the number of households of weaker section in plains of dairy villages the percentage of the total milk production is not good. Because 66 percent of the total households of the plains belong to the weaker section but only 53.89 percent of the total milk production of dairy villages is produced by the said group. In otherwards, this figure is almost the same or above in both the situation of plains and hills.

HOME CONSUMPTION :

In Amul and Himul all the sample households are rearing milch animals with some exceptions in non-dairy villages in Himul for the additional source of income. After keeping some milk for their home consumption, the surplus milk is sold indirectly through the existing marketing channels or directly to the consumers. In some places where there is no ready market i.e. in non-dairy villages, the households process the milk into ghee and sell it to the nearby market in Amul; but in Himul there is no such market facilities and that is why the households are bound to keep large portion of milk for

their home consumption except in size group A. and size group D (Table 7.11) where the households are not

TABLE 7.11
Percentage of Home Consumption and Marketing of Milk

Group (Holding Pattern)	Home consumption		Marketing surplus			
	Amul	Himul	Amul		Himul	
			Milk	Ghee	Milk	Ghee
Dairy Villages						
A	16.67	22.69	83.33	-	77.31	-
B	20.95	28.34	79.05	-	71.66	-
C	27.38	27.69	72.62	-	72.31	-
D	21.43	32.00	78.57	-	68.00	-
Non-Dairy Villages						
A	14.77	19.64	60.23	25.00	80.36	-
B	23.82	43.24	61.22	14.96	56.76	-
C	30.92	100.00	16.42	52.66	-	-
D	34.94	-	-	65.06	-	-

interested to keep milch animals or to increase production of the milk. However, they are purchasing milk from the local milkman.

The trend of percentage of marketing surplus in both Dairy and Non-dairy villages is at a declining level

with the large size group with some exception. This is more or less a natural phenomenon. The increase in the size of holding is corelated with the increase in the economic status of the sample households which help them to keep a larger part of their produced milk.

TABLE 7.12

Percentage of Home Consumption and Marketing of Milk in Plains and Hills of Himul

Group (Holding Pattern)	Home Consumption		Marketing Surplus (Milk)	
	Plains	Hills	Plains	Hills
Dairy Villages				
A	-	23.07	100.00	76.93
B	47.14	22.95	52.86	77.05
C	28.79	26.66	71.21	73.34
D	53.33	-	46.67	100.00
Non-Dairy Villages				
A	25.00	16.66	75.00	83.34
B	60.51	14.29	39.49	85.71
C	100.00	-	-	-
D	-	-	-	-

The number of sample households keeping milk for home consumption in Dairy and Non-Dairy villages in Amul is 21 percent and 27 percent respectively and in Himul 27 percent and 31 percent respectively of their total milk

production. All the groups of the milk producers in non-dairy villages except landless group, keep a larger part of their milk production for their home consumption than the dairy villages.

In dairy villages of Himul, the percentage of home consumption of milk in plains is larger than that of hills. And also in non-dairy villages this picture is the same (Table 7.10). The quantity of production is higher in weaker section of hills than plains in both the situations and is lower in stronger section of hills than plains in both the situations.

However, it may be concluded that the households of the plains are not dependent on milk marketing. They are keeping cows mainly for agricultural purpose. Though they have some milch animals, they are not taking proper nursing and also they are not trying to increase the productivity of milch animals by adopting scientific measures.

MARKETING CHANNEL :

The milk is more perishable than the farm products. It requires either timely disposal or conversion into milk products or quick transport facilities to a ready market. Due to the above natural phenomena the milk

producers do not always get proper price of the milk or milk products.

In the sample villages, there are different types of milk marketing channels, such as (1) milk co-operatives (2) local 'gowallas' (milk traders) (3) Urban 'gowallas' and (4) local consumers. In the areas where the milk co-operatives are functioning (i.e. in dairy villages) the milk producers sell all the liquid milk through the milk co-operatives, but in the plains of Himul it is an exception. In the plains of Himul, the milk producers are getting loan advance from the local or Urban 'gowallas' at the time of their need subject to the condition that some part of their surplus milk is to be sold through them. Some times they sell some milk to the local consumers and private traders.

In non-dairy villages (i.e. where there is no milk co-operatives) maximum portion of the produced milk is sold through the local or Urban 'gowallas'. Some of the producers of non-dairy villages, specially in Amul and also in hills of Himul, carry their milk to the nearest milk co-operatives (located at a distance of 5 to 6 kilometers) regularly to avoid malpractices persued by the local or urban 'gowallas' and get **fair** price.

THE MILK CO-OPERATIVES AND ITS IMPACT :

The milk producers are provided a number of facilities by the milk cooperatives of Amul and Himul. They are getting weekly cash payments for their milk, ready market for their surplus milk, medical facilities for their milch animals, a uniform rate, subsidised cattle feed, 'lucerne' seeds, and free artificial insemination, etc. Besides, they are also getting indirect facilities like village organisations, development of infrastructure, etc. The producers are also distributed in the form of 'vao-tafat' (price-difference) or bonus every year by their milk cooperative societies out of their profit. These facilities make the dairying a subsidiary or some times a main source of income. According to the opinions expressed by most of the rural milk producers of the sample dairy villages, the creation of milk societies in the rural areas has provided some positive benefit and thereby a positive impact on the rural economy.

It is difficult to measure the impact of the above facilities provided to the rural milk producers. It is more difficult to measure the impact of each benefit separately. However, an attempt has been made to measure their impact in the following form.

- i) Impact on production of milk;
- ii) Impact on income from sale of milk;
- iii) Impact on milk producers' own opinions.

i) Impact on production of milk :

Some scientific measures as well as continuous efforts provided by the milk co-operative societies (i.e. extension of animal husbandry practices) have helped the producers adopting scientific animal management practices. It increases the yielding capacity of milch animals in the areas covered by the milk cooperatives. Yet, the provisions of extension services (i.e. inputs for milk production) and animal husbandry services, by the milk cooperative services depends upon the agreeable infrastructure, adequate funds, inputs and appropriate personnel.

a) Extension services :

In dairy villages of Amul and Himul the milk cooperative societies have the provisions for providing animal husbandry services (viz. artificial insemination, routine veterinary services etc.) and the inputs of milk production (viz. cattle feed, 'lucerne' seeds etc.). The adoption of extension services by the sample milk producers of Amul and

TABLE 7.13

Adoption of Extension Services by the Producers of Amul and Himul in Dairy Villages

Group (Holding Pattern)	No. of families adoption of															
	A. I.				Routine Vet. Service				Special visits of Vet. Doctors				Cultivating green fodder			
	A		H		A		H		A		H		A		H	
	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%
A	18	82	12	54	20	91	0	0	15	68	18	82	0	0	0	0
B	39	74	40	73	44	83	4	18	34	63	32	58	16	30	10	18
Total	57	76	52	67	64	85	4	5	49	65	50	65	16	21	10	13
C	12	92	10	67	13	100	4	27	12	92	6	40	6	46	2	13
D	10	83	7	87	10	83	1	12	10	83	7	87	7	58	1	12
Total	22	88	17	74	23	92	5	22	22	88	13	56	13	52	3	13
Grand Total %	79	79	69	69	97	97	9	9	71	71	63	63	29	29	13	13

Notes : A.I. = Artificial Insemination
Vet. = Veterinary

Himul in dairy villages is indicated in the following table. It (Table 7.13) indicates that in case of Amul and Himul extension services are adopted by most of the sample milk producers according to their size of holding. In both the situations the producers of the weaker section adopt extension services less than those of stronger section due to their economic and social conditions. However, adoption of extension services of Amul almost in all respect is better than that of Himul. Seventy six (76) percent of the Weaker section of Amul has got artificially inseminated milch animals but only 67 percent is in Himul. In Amul and Himul 65 percent of the weaker section uses the services of Veterinary doctors by calling them for special visits. The tendency in adoption of improved extension services by stronger groups of both Amul and Himul shows a better position except special visits of veterinary doctors in Himul. In Amul all the groups are getting facilities of routine veterinary services more than Himul.

It may be observed that in Amul the position of adoption of improved extension services (i.e. improved animal husbandry practices) by all the groups is much better than that of Himul. Due to agricultural advancement of Kaira district (i.e. area of Amul) and to the longstanding of Amul dairy with continuous efforts in the

TABLE 7.14

Adoption of Extension Services by the Producers of Hills and Plains of Himul in Dairy Villages

Group (Holding Pattern)	No. of families adoption of															
	A.I.				Routine Vet. service				Special visits of Vet. doctors				Cultivating green fodder			
	P		M		P		M		P		M		P		M	
	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%
A	6	100	6	37	0	0	0	0	2	33	16	100	0	0	0	0
B	26	96	14	50	4	15	0	0	14	52	18	64	10	37	0	0
Total	32	97	20	45	4	12	0	0	16	48	34	77	10	30	0	0
C	9	90	1	20	3	30	0	0	5	50	1	20	2	20	0	0
D	7	100	0	0	0	00	0	0	6	86	1	100	1	14	0	0
Total	16	94	1	17	3	12	0	0	11	65	2	33	3	18	0	0
Grand Total/%	48	96	21	42	7	14	0	0	27	54	36	36	13	26	0	0

Notes : A.I. = Artificial insemination

Vet. = Veterinary

field of extension, this achievement is possible.

However, an analysis of the position of adoption of extension services by household in the plains and the hills of Himul depicts that in all respects the adoption of extension services by the producers of hills of Himul is less than that of Plains of Himul except special visits of veterinary doctors (Table 7.14). Here also the stronger section of the sample village producers adopt the extension services in both the plains and the hills except routine veterinary services in the plains and special visits of veterinary doctors in the hills. Ninety six (96) percent of the producers of plains has got artificially inseminated milch animals whereas the number of the same in the hills is 42%. It is peculiar that there is no producer members of the sample villages of Hills who have reported that they are getting routine veterinary services and they have no plot where they can cultivate green fodder. In view of the above it is undeniable that the provisions for extension services or activities for extension services are very poor.

b) Productivity :

The daily production of milk per milch animal of dairy and non-dairy sample villages and a statistical

analysis have been attempted (Table 7.15).

TABLE 7.15
Daily Milk Production of Per Milch Buffalo or Cow (in litre)

Group (Holding Pattern)	Dairy Villages		Non-Dairy Villages	
	Amul	Himul	Amul	Himul
A	8.0	3.0	4.7	3.1
B	6.8	2.1	4.9	1.5
Average	6.5	2.3	4.8	2.2
C	6.3	1.2	4.9	1.0
D	6.2	1.3	5.6	0.0
Average	6.3	1.3	5.0	0.5
Overall	6.5	2.0	4.9	2.1

It can be observed from the above table that the yielding capacity of the milch animals (i.e. milk obtained by the milk producers) in dairy villages of both Amul and Himul is higher than that of non-dairy villages of Amul and Himul, with some exception. The producers of the Weaker section of Amul in Dairy Villages, obtain on an average 6.5 litres of milk per milch animals daily but in this situation the producers of non-dairy villages

obtain on an average 4.8 litres of milk per milch animal per day. However, in Himul in the same situation the producers obtain 3.1 litres of milk per cow per day in non-dairy villages as against 3.0 litres obtained by the similar group in dairy villages. In all the situations the Himul is lagging behind Amul.

The same distribution considered in respect of hills and plains of Himul discloses a different picture (Table 7.16).

TABLE 7.16

Daily Milk Production of Per Milch Cow (in litre) in Hills and Plains of Himul

Group (Holding Pattern)	Dairy Villages		Non-Dairy Villages	
	P.	M.	P.	M.
A	1.0	3.4	2.5	3.6
B	1.2	2.8	1.9	1.1
Average	1.1	3.0	2.1	2.3
C	0.8	3.7	1.0	0.0
D	0.9	3.3	0.0	0.0
Average	0.8	3.6	1.0	0.0
Overall	1.0	3.1	2.0	2.1

The yielding capacity of the milch animals of non-dairy villages in hills is higher almost in all respect than the dairy villages in Plains. But the yielding capacity of the milch animals of dairy villages in hills is higher than that of non-dairy villages in hills. In both the situations i.e. in dairy and non-dairy villages and also in both plains and hills the difference between the yielding capacity of the milch animals of weaker section and stronger section is negligible. However, on an average the producers of hills obtain higher percentage of milk than that of the producers of the plains do in both the situations. However, it is to be noted that in hills, the big farmer i.e. group D has one milch animal but produces a negligible quantity of milk.

The milk yielding capacity of milch animals depends upon the factors like scientific management of milch animals, balance feeding and proper breeding. In dairy villages, the different facilities given to the farmer (i.e. milk producer) by the milk co-operatives has not only helped them directly but also helped them to increase the yielding capacity of the milch animals. Whatsoever, this may be said that the facilities provided by the milk co-operatives to producers or farmers would be one of the casual factors for increasing milk yields in dairy villages.

ii) Impact on income from sale of milk :

a) Sources of income :

The basic objective of the rural milk co-operative societies is to develop the economic conditions of rural milk producers, especially, to that of the landless and marginal farmers, i.e. the weaker section. They own most of the milch animals in the milkshed and providing ready milk marketing facilities for their surplus milk. And this basic objective depends upon two factors viz.

(1) what average price of the milk is obtained by the milk producers and (2) what amount is earned by the rural households through dairying.

Dairy farming, crop farming and other occupation like Govt. & non-Govt. services, business, labour etc. are the major source of income of the rural households in the milkshed areas of Amul and Himul. In order to compare the share of dairy farming as a source of income of the rural households of Amul and Himul in Dairy and non-dairy villages, the average income earned by the sample households from various sources as well as their total income (of Amul and Himul in both dairy and non-dairy villages) have been analysed (Table 7.17).

In dairy villages of Amul, dairy farming is the main source of income of the landless families . but in non-dairy villages the households depend upon mainly other

TABLE 7.17

Average Yearly Income Per Sample Households From Different Sources of Income of Amul and Himul (in Rupees)

Group (Holding Pattern)	Average yearly income per sample household from different sources of income								Crop farm ing income per hectre of land	
	Dairy farming		crop farming		other sources		total income		A	H
	A	H	A	H	A	H	A	H		
DAIRY VILLAGES										
A	4492 (65.41)	5436 (40.65)	-	977 (7.30)	2376 (34.59)	6959 (52.05)	6868 (100)	13372 (100)	-	-
B	4035 (35.01)	4340 (29.71)	6070 (52.67)	3804 (26.05)	1419 (12.32)	6460 (44.25)	11524 (100)	14604 (100)	5432	2921
C	4950 (23.36)	3900 (19.50)	15831 (74.72)	7467 (37.84)	407 (1.92)	8627 (43.16)	21188 (100)	19994 (100)	4888	2002
D	8443 (13.54)	3662 (18.55)	53473 (83.59)	12500 (63.36)	1833 (2.87)	3562 (18.09)	63749 (100)	19724 (100)	8798	2642
Overall	4809 (26.65)	4461 (28.66)	11693 (64.78)	4437 (28.65)	1546 (8.57)	6663 (28.53)	18048 (100)	15561 (100)	6710	3130
NON-DAIRY VILLAGES										
A	3703 (40.48)	1195 (11.67)	-	181 (1.77)	5445 (59.52)	8857 (86.56)	9148 (100)	10233 (100)	-	-
B	2449 (26.44)	1640 (12.87)	3318 (35.83)	2100 (16.48)	3494 (37.73)	9000 (70.65)	9261 (100)	12740 (100)	3630	1270
C	3381 (26.14)	100 (1.76)	8912 (68.89)	3633 (64.12)	642 (4.97)	1933 (34.12)	12935 (100)	5666 (100)	2889	1003
D	2695 (11.43)	3600 (11.39)	18163 (77.02)	10000 (31.64)	2724 (11.55)	18000 (59.97)	23582 (100)	31600 (100)	3036	1703
Overall	3025 (23.53)	1400 (11.49)	7176 (55.82)	1544 (12.68)	2655 (20.65)	9236 (75.83)	12856 (100)	12180 (100)	3040	947

Note : Digits within brackets denote the percentage of different sources of income in total income.

- We have assumed that the rate of change of income and the rate of change of price of milk followed an identical rate which happened to be 2.2. Income figures ^{of Amul} have been adjusted by using this multiplier. These estimated income are of course very rough.

occupations like labour etc. Whereas in Himul in both the situations the main source of income of the landless household families is not dairy farming. They earn something from the crop farming like zinger, vegetable, oranges, tea (green leaves) etc. in their residential premises. However, in both the situations of Amul the crop farming on an average is the largest source of income i.e. 64.78 and 55.82 percent of the total income. But in Himul the share of dairy farming, crop farming and other sources of income are almost the same in dairy villages and in non-dairy villages; more than 75 percent of the total income comes from other sources. In both dairy and non-dairy villages of Amul and Himul the percentage of income from crop farming increases with the increase in the size of holding with the exception of group D of non-dairy villages in Himul.

In dairy villages of Amul and Himul and in non-dairy villages of Amul the percentage of income from dairy farming decreases with increase in the size of holding. However, the percentage of income from both the dairy farming and crop farming in both the situations of Himul is lagging behind Amul in all groups of households. In both Amul and Himul, the income from crop farming in dairy villages is higher than that in the non-dairy villages. The average income from dairy farming and crop farming in

all groups of Amul in dairy and non-dairy villages are higher than that of Himul in all respects. The income from crop farming per hectre in both Amul and Himul are higher in dairy villages than that of the non-dairy villages. Again the incomes from crop farming per hectre in Himul in both the situations are very poor compared to Amul. Unlike in Himul, the dairy farming in Amul is next important occupation to crop farming in both the situations. In non-dairy villages of Himul the income from other sources (i.e. 75.83 percent of the total income) is the main occupation and in dairy villages of Himul the income from three categories is almost the same.

The dairy farming is the important source which influences the development of income for the economically weaker section in the rural areas especially in dairy villages of Amul. In dairy villages, the landless group has earned about 65.41 percent in Amul and 40.65 percent in Himul. And the percentage of average income from crop farming in all groups in dairy villages of Amul is higher than that of Himul. As the average income from crop farming is lower in all the groups of non-dairy villages in Amul, it become evident that the dairy farming of Amul is one of the important factors which influences the crop farming. Whereas in Himul, the crop farming is not influenced by the dairy farming so much as Amul. The average income from dairy farming is proportionately high

in Himul than Amul according to their milk production. (Table 7.9 and Table 7.17) it indicates that the producers of Himul are not spending more for the betterment of their milch animals.

However, in the plains and in the Hills of Himul, what is the picture of average income per sample households from dairy and other sources has been elaborated below (Table 7.18).

In both the situations, in Hills of Himul, the percentage of average income from dairy farming is more than that of plains in respect of all groups. Again the percentage of average income from crop farming in Plains of Himul in both the situations is more than hills in respect of all groups except the landless one. The sample households of hills in both the situations realises higher percentage of average income through other sources than in the Plains except the landless group. The proportion of farm income of hills and plains under both the situations increases with increase in the size of land holding (with one exception). But in case of dairy farming the proportion of income of hills and plains decreases with increase in the size of land holding under both the situations with two exceptions. However, the average income under both the situations in respect of all groups of hills are higher than that of plains with a few exceptions.

TABLE 7.18

Average Yearly Income Per Sample Households From Different Sources of Income of Hills and Plains of Himul (in Rupees)

Group (Holding Pattern)	Average yearly income per sample households from different sources of income							
	Dairy farming		Crop farming		Other sources		Total income	
	P	M	P	M	P	M	P	M
DAIRY VILLAGES								
A	1200 (19.15)	7025 (43.80)	417 (6.65)	1187 (7.40)	4650 (74.20)	7825 (48.80)	6267 (100)	16037 (100)
B	1615 (16.60)	6969 (37.48)	4518 (46.44)	2757 (14.83)	3596 (36.96)	8868 (47.69)	9729 (100)	18594 (100)
C	3070 (15.98)	5560 (25.55)	9200 (47.89)	4200 (19.30)	6940 (36.13)	12000 (55.15)	19210 (100)	21760 (100)
D	2900 (17.09)	9000 (23.08)	12857 (75.75)	10000 (25.64)	1215 (7.16)	20000 (59.28)	16972 (100)	39000 (100)
Overall	2036 (16.13)	6886 (37.22)	6330 (50.15)	2544 (13.75)	4256 (33.72)	9070 (49.03)	12622 (100)	18500 (100)
NON-DAIRY VILLAGES								
A	1122 (11.66)	1250 (11.69)	133 (1.38)	217 (2.03)	8367 (86.96)	9225 (86.28)	9622 (100)	10692 (100)
B	564 (5.40)	3009 (19.22)	2814 (26.93)	1191 (7.60)	7071 (67.67)	11456 (73.18)	10449 (100)	15654 (100)
C	-	400 (3.74)	5250 (31.53)	300 (2.80)	11500 (68.47)	10000 (93.46)	16650 (100)	10700 (100)
D	-	10000 (31.65)	-	3600 (11.39)	-	18000 (56.96)	-	31600 (100)
Overall	720 (6.76)	2080 (15.17)	2044 (19.29)	1044 (7.61)	7884 (74.04)	10588 (77.22)	10648 (100)	13712 (100)

The average income from dairy farming of hills is the next to other sources under both the situations. But in plains under both the situations income from crop farming is next to other sources of income. And average income from the dairy farming of plains is very poor. So it is to be noted that the crop farming income is not influenced by the dairy farming income. But the economic status of the hills' sample households is influenced partly by the dairy farming especially in the dairy villages.

b) Pricing :

In dairy villages as well as non-dairy villages in Himul surplus milk is sold in the form of liquid, but in dairy villages of Amul maximum portion of milk after keeping home consumption is sold in the liquid form. Whereas in non-dairy villages it is sold half in the form of liquid and the rest in the form of ghee etc. as there is no marketing facilities in non-dairy villages of Amul for selling the milk produced in the form of liquid milk.

The price of milk products varies in relation to forms or grades, time and place, but the price of the liquid milk doesnot vary to a significant extent except during occasions like religious festivals etc. Considering all these factors a comparative analysis of price of the milk and milk products, the price of liquid milk has been taken into account.

TABLE 7.19
Average Price of Fluid Milk of Amul and Himul in Rs./
Litre

Group (Holding Pattern)	Average price of fluid milk			
	Dairy Villages		Non-Dairy Villages	
	A	H	A	H
Weaker section	3.56	3.24	3.06	4.11
Stronger section	3.78	3.55	3.06	3.75
Overall	3.63	3.33	3.06	4.06

The Table 7.19 shows that the average price of liquid milk in dairy villages of Amul is higher than that of non-dairy villages. But in Himul this average price is higher in non-dairy villages than it is in dairy villages. However, the average price of liquid milk in dairy villages is higher in Amul than in Himul but in non-dairy villages it is higher in Himul than that of Amul. It depicts that the milk marketing channel of dairy cooperatives has provided better milk marketing facilities to the producers of dairy villages than what has been provided by other milk marketing channels in Amul. In Himul the other milk marketing channels have offered better price to the producers especially in non-dairy villages.

When we observe the same in respect of plains and hills of Himul, it could be observed that (Table 7.20) in both the situations the average price are higher in plains than that of hills. However, the average prices of liquid milk in non-dairy villages of plains and hills both are higher compared to the dairy villages. Thus it may be concluded that the dairy cooperative marketing channel cannot provide better price to the producers of dairy villages.

TABLE 7.20
Average Price of Fluid Milk of Plains and Hills (in Rs./Litre) of Himul

Group (Holding Pattern)	Dairy Villages		Non-Dairy Villages	
	P	M	P	M
Weaker section	3.66	2.98	4.47	3.70
Stronger section	3.72	3.15	4.00	3.50
Overall	3.69	3.01	4.39	3.67

It may also be concluded that in Amul and in Plains and Hills of Himul, the stronger section of the households in dairy villages is getting higher prices than what the weaker section gets. But in non-dairy villages the weaker section of the households is getting better prices than

the stronger section of the households in Amul and the same is applicable to both Plains and hills of Himul.

c) Income from dairying :

"The annual income from dairy farming depends upon many factors like (a) total milk yield and consumption of milk by milk producers, which ultimately determines the marketed surplus of milk (b) price offer - depending upon the fat and S.N.F. contents of the milk and unit price of Rs./kg. fat and (c) Wet period of milch animals in the year under consideration. Such factors further depend upon certain basic criteria like (1) type of milch animal i.e. breed, yield potentials, age, etc. indicating the possibly obtainable quantity and quality of milk (ii) feeding practices and health care of the animals and (iii) pricing policy adopted by the milk marketing channels"⁷.

In favour of milk producers, only the milk co-operatives may make a combination of all the above factors which lead to positive effect on the income of the milk producers. The Table 7.21 shows a picture of average yearly income from dairying of Amul and Himul.

In both Amul and Himul overall average yearly income per milch animal from dairying is higher in dairy villages. Such income of weaker section is higher than that

TABLE 7.21

Average Yearly Income from Dairying of Amul and Himul (in Rupees)

Group (Holding Pattern)	Average yearly income per milch animal			
	Dairy Villages		Non-Dairy Villages	
	A	H	A	H
Weaker section	3291	2523	1905	1652
Stronger section	3126	1097	1872	1950
Overall	3124	2009	1887	1666

of stronger section in both the situations of Amul and Himul except non-dairy villages of Himul. The average yearly income per milch animal in dairy villages in both weaker and stronger sections is higher than that of non-dairy villages of Amul and Himul. The sole exception being the stronger section of non-dairy villages of Himul. However, this average yearly income is higher in both dairy and non-dairy villages of Amul than Himul.

Again it may be discussed in respect of Plains and Hills of Himul in the following (Table 7.22).

The position of Dairy villages in Plains is better than that of non-dairy villages of Himul in respect of average yearly income per milch animal (Table 7.21 and

TABLE 7.22
Average Yearly Income From Dairying of Plains and Hills of
Himul (in Rupees)

Group (Holding Pattern)	Average yearly income per milch animal			
	Dairy Villages		Non-Dairy Villages	
	P	M	P	M
Weaker section	1927	3750	667	3700
Stronger section	823	2044	-	3900
Overall	1366	3443	643	3714

7.22). But it is peculiar that the average yearly income per milch animal is higher in non-dairy villages than that of dairy villages especially in the group of stronger section (Table 7.22). It is evident that the overall average income per milch animal in dairy and non-dairy villages of hills of Himul is higher than that of Amul (Table 7.21 and 7.22).

d) Per capita milk consumption :

Now in the following table the per capita milk consumption in the sample villages is discussed.

TABLE 7.23
Per Capita Milk Consumption in the Sample Villages of
Amul and Himul

Group (Holding Pattern)	Dairy Villages (in M.L)		Non-Dairy Villages (in M.L)	
	A	H	A	H
Weaker section	177	189	144	48
Stronger section	255	88	145	38
Overall	199	145	144	47

The per capita milk consumption, in both dairy and non-dairy villages of Himul is more in Weaker Section of the sample households than in the stronger section. But in Amul in both the situations the per capita milk consumption of the stronger section is more than that of Weaker Section. However, the overall milk consumption of Amul in both the situations is higher than that of Himul. In the dairy villages of both Amul and Himul the per capita milk consumption is 199 ml. and 145 ml. respectively as against their counterparts in the non-dairy villages which can hardly manage to consume 144 ml. and 47 ml. respectively per head. And this difference is more significant in Himul. In both the situations of Amul and only in dairy villages of Himul the per capita milk consumption is over

the national per capita milk consumption which is 144 ml. per head⁸. But according to the recommendation of Indian Council of Medical Research the per capital milk consumption should be 210 ml.⁹. Here this target has been fulfilled only in stronger section of Amul in dairy villages.

However, in respect of hills and plains of Himul, such per capita income discloses a different picture (Table 7.24).

TABLE 7.24

Per Capita Milk Consumption in the Plains And Hills of Himul

Group (Holding Pattern)	Dairy Villages (in ml.)		Non-Dairy Villages (in ml.)	
	P	M	P	M
Weaker section	135	225	68	29
Stronger section	84	103	83	-
Overall	104	199	69	26

The per capita milk consumption only achieves the target of national average in dairy villages of the hills of Himul. And only the Weaker section of dairy villages in the hills achieves the recommendation of the Indian council of Medical Research. In both the situations the

per capita milk consumption is very much low in the plains of Himul. However, the per capita milk consumption of dairy villages in the hills of Himul is the same as the per capita milk consumption in dairy villages of Amul.

The milk cooperatives have created a situation to raise the level of milk consumption especially among the milk producers of Amul and hills of the Himul.

iii) Impact on milk producers' own opinion :

Dairy co-operatives actually are the media of services rendered by the milk union and the village milk producers as well as a nice milk marketing channel. The main objectives of the milk cooperatives are to elevate the productivity of cows and to uplift the economic status of the rural people. However, these objectives depend mainly on the individual interest and awareness of the milk producers regarding the activities of dairy co-operatives. Some data, opinions and information have been used as sample from the sample milk producers of Amul and Himul to ascertain the awareness of the milk producers (Table 7.25). These are plotted on the following table.

TABLE 7.25

Percentage of Respondents Point Out a Special Reason in Favour of Milk Cooperatives

Group (Holding Pattern)	Reasons :									
	Good source of income		Offers fair price for milk		Provides ready market for milk		Fair practices		Other reasons	
	A	H	A	H	A	H	A	H	A	H
A	36.35	-	54.55	4.54	4.55	4.54	4.55	90.92	-	-
B	30.19	-	43.40	1.82	3.77	0.09	16.98	89.09	5.66	-
Weaker section	32.00	-	46.67	2.60	4.00	7.79	13.33	89.61	4.00	-
C	15.38	-	30.77	-	15.38	-	23.09	93.33	15.38	6.67
D	25.00	-	41.67	-	-	-	25.00	100.00	8.33	-
Stronger section	20.00	-	36.00	-	8.00	-	24.00	95.65	12.00	4.35
Overall	29.00	-	44.00	2.00	5.00	6.00	16.00	91.00	6.00	1.00

At the time of survey the producers are requested to state why they are motivated to form the milk society and to sell their surplus milk to the society. However, there are so many reasons in favour of dairy cooperatives but they were asked to state only one prominent reason. The Table 7.25 depicts that the most of the sample milk producers of Amul have voted for the dairy cooperatives as society offers fair price for milk as well as good source of income whereas most of the sample milk producers of Himul have given their particular opinion in favour of milk cooperatives as these societies operate their activities in a fair way. In Amul, weaker section especially landless families also speak in favour of the milk cooperatives for offering fair price. There are other reasons the milk society renders services such as artificial insemination, subsidised cattle feed, veterinary aid etc. In both Amul and Himul the weaker section especially landless families of Amul and both A and B Groups of Himul have no awareness of such advantages. And this awareness is also very poor in stronger section of Himul.

It may further be discussed in respect of Plains and hills of Himul.

TABLE 7.26

Percentage of Respondents Pointout a Special Reason in Favour of Milk Cooperative of the Plains and Hills of Himul

Group (Holding Pattern)	Reasons :									
	Good source of income		Offers fair price for milk		Provides ready market for milk		Fair Practices		Other reasons	
	P	M	P	M	P	M	P	M	P	M
A	-	-	-	6.25	16.67	-	83.33	93.75	-	-
B	-	-	3.70	-	1.11	7.14	95.19	92.86	-	-
Weaker section	-	-	3.03	2.27	1.21	4.54	95.76	93.19	-	-
C	-	-	-	-	-	-	90.00	100.00	10.00	-
D	-	-	-	-	-	-	100.00	100.00	-	-
Stronger section	-	-	-	-	-	-	94.12	100.00	5.88	-
Over all	-	-	2.00	2.00	8.00	4.00	88.00	94.00	2.00	-

The Table 7.26 shows that in both the plains and hills of Himul most of the milk producers have given their opinion in favour of milk cooperatives as society carry on their activities in a fair way. Besides, all the groups especially weaker section of the plains and weaker and stronger sections of the sample households of the hills are not aware of the facilities provided by the society.

In Amul, the milk producers are motivated to join and to sell their surplus milk to the society mainly for fair price for the surplus milk. Before Amul was set up such facility through other means was quite absent. Whereas in Himul, in both the plains and Hills, the milk producers are motivated to join and to sell their surplus milk to the dairy cooperatives mainly for fair practices rendered by the Himul. Before Himul, the 'gowallas' as well as local milk contractors had been practicing unfairness in dairy business.

To ascertain the producers' opinion regarding the impact of dairy cooperatives on their livelihood, they have been asked question mainly on the following three categories of impacts of dairy cooperatives.

- a) Impact on agriculture;
- b) Impact on Dairying;
- c) Impact on economic status of the milk producers.

In Himul most of the sample milk producers believe that the dairy cooperatives have uplifted their economic status in the hills as well as in the plains. But in Amul most of them believe that the dairy cooperatives have been beneficial in farm production. A significant number of sample milk producers have also expressed their opinion regarding impact of dairy cooperative saying that the dairy cooperatives have been beneficial in their milk production (in both Amul and Himul and especially in the hills of Himul). And also a few milk producers in the plains of Himul believe that the dairy cooperatives have been beneficial in their farm production. Some of the milk producers of Amul believe that the dairy cooperatives have been useful in uplifting their economic status. Some milk producers have, however, refused to air their opinions regarding the impact of dairy cooperatives in both Amul and Himul.

On the whole, it may be observed that in Himul most of the milk producers believe that the dairy co-operatives have uplifted their economic status in the hills and in the plains through inducement of the habit of dairying. But the majority of the producers in Amul holds a contrary view. They believe that the dairy co-operatives have been much beneficial primarily to the matter of their farming in agriculture.

SUMMARY :

Amul induced an impact on rural economy. The same is also observed in case of Himul though its impact is not as impressive as Amul. The rate of domesticating milch animals in the dairy villages of both Amul and Himul is higher than that in non-dairy villages. On the other hand the number of milch animals per family in Himul is larger than the dairy villages of Amul. Yet the productivity of milch animals in Amul villages is much higher than that of the plains of Himul. The productivity of milch animals in the plains of Himul is less than that in hill areas.

Even today there is no ready milk market in non-dairy villages. For that reason in case of both Himul and Amul, the producers of those areas use a large part of their product for home consumption and even this rate of home consumption is higher than that of dairy villages. Again, the per capita milk consumption is high in dairy villages of both Himul and Amul.

The producers of Amul get the advantage of extension services, more than those of Himul villages. So the yielding capacity of milch animals in those areas is also higher. But though the producers of hilly areas of Himul receive the benefit of extension services less than those

of plain areas, yet the yielding capacity of milch animals is higher in hill areas. Even the non-dairy hilly villages have milch animals with very significant yielding capacity. Again average yielding capacity of milch animals in dairy villages of Amul and plain as well as hill areas of Himul is higher than that of non-dairy villages.

A comparative analysis regarding the income from dairy farming in dairy villages of Amul and Himul shows that the income of dairy villages of Himul from dairy farmings proportionately higher than that of Amul. Of course, the percentage of income from Agriculture and dairy farming in dairy villages of Amul is higher than that of non-dairy villages and the percentage of income from agriculture is the highest. On the other hand the percentage of income from dairy farming, agriculture and other sources in dairy villages of Himul is almost equal though the percentage of income from those sources is higher in dairy villages of Himul than that in non-dairy villages. The percentage of income from Agriculture of the dairy villages of Amul is higher than that of the dairy villages of Himul. However, in dairy villages of both Amul and Himul, the percentage of income from dairy farming and agriculture is higher than that of non-dairy villages. Again in hilly areas the percentage of income from dairy farming is much higher than that from agriculture though the matter is just the reverse in case of

plain areas. In short dairy farming has remarkably made an impact on the agriculture of Amul villages and Himul also has done the same though its role is not so remarkable. Of course, Himul has contributed to the betterment of economic status of the people of dairy villages, specially in hill areas.

The producers of dairy villages of Amul get comparatively high price of milk than those of non-dairy villages. But both the plains and the hills of Himul pay smaller price to the producers of dairy villages, than to those of non-dairy villages. Besides, the producers of dairy villages get higher price of their product if they sell it to other existing marketing channel instead of Himul dairy.

Most of the producer members of Amul sell their product to Amul because they get fair price from it. According to the producer members of Himul, they get many facilities from Himul and so they sell their milk there.

However, view point of the producers in the matter of uplifting their economical status differ widely between Amul producers and Himul producers.

Notes & Reference

1. Prof. Raj Krishna, 'Indian Dairyman', Vol.32. Delhi : Published by Indian Dairy Association, 1980.
2. M.S.Randhawa, 'Indian Dairyman', Vol.28. Delhi : Published by Indian Dairy Association.
3. Surjit Sing Barnala, "New Strategy for Rural Development", 'Yajana'. Delhi : Government of India, March 1979.
4. M.S.Bedi, Dairy Development Marketing And Economic Growth. New Delhi : Deep & Deep Publications, 1987, p.87.
5. "In stratified sampling, the population is subdivided into several parts, called strata, and then a sub-sample is chosen from each of them. If the selection from strata is done by random sampling, the method is known as stratified random sampling. The subdivision into strata is purposive, but the selection from strata is

purely random. Stratified random sampling may, therefore, be viewed as a mixture of purposive and random sampling, and combines the advantage of both.

Stratified sampling is generally used when the population is heterogeneous, but can be subdivided into strata within each of which the heterogeneity is not so prominent. Some prior knowledge is, therefore necessary for subdivision into strata, called stratification. If proper stratification can be made such that the strata differ from one another as much as possible, but there is much homogeneity within each of them, then a stratified sample will yield better estimates than a random sample of the same size" - N.G.Das, Statistical Methods in Commerce, Accountancy & Economics. Calcutta : M.Das, 1973, p.455.

6. M.S.Bedi, op.cit., p.9.
7. Dr. S.M.Patel and Shri M.K.Pandey, Economic Impacts of Kaira Districts Co-operative Milk Producers' Union (Amul Dairy) in Rural Areas of Kaira Districts (Gujrat State). Ahmedabad : Published by Institute of Co-operative Management, 1976, pp. 23 & 24.
8. Operation Flood - A Progress Report. Baroda : Published by Indian Dairy Corporation, 1986, p.1.
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