

Consumption pattern and Nutritional Status5.1 INTRODUCTION

Contrary to popular belief, nutritionists agree that malnutritious in India is largely caused by an inadequate intake of food, rather than from wrong kind of food. Detailed studies carried out in various parts of the country by the Indian Council of Medical Research show that the low-income group's food intake is only about 45% of what they are required to take. These studies also lead to the conclusion that the Indian diet with its regional variations is a balanced one meaning that what is traditionally used for eating is not grossly deficient in any one of the essential nutrients.

The stark reality then is that until the poor in India can afford to take two square meals instead of one they will continue to be vulnerable to malnutrition. The only way anybody can help them is by giving them more money to buy more food. <sup>1</sup>Dr. Mogens Jul, the Danish Nutritionist who while studying the impact of Operation Flood has placed special emphasis on the nutritional aspect, points out that milk fat in India is three times more expensive than vegetable fat and is not superior in quality. So are the milk proteins three times more expensive than vegetable proteins of almost comparable quality. It is therefore, more logical that the rural poor, with the underutilised labour available, should produce expensive milk nutrients for the urban well to do and use the money thus earned to buy vegetable fat and proteins.

A study carried out in parts of the Kaira District has shown that those who have adopted the cooperative system of dairying have more than

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<sup>1</sup> Morgen Jul - On the impact of Dairy development in India (FAO)  
(Unpublished Draft)

doubled household incomes when compared with non-adopters. If this can happen in Kaira District which is well advanced in agricultural production then in more backward areas like Rajasthan dairying can more than triple household incomes. The impact of such cash generation from the poor milk producers need hardly be emphasized.

As Dr. Jul also points out, people in the low-income group, wisely or otherwise, will spend a third of their incomes on necessities other than food. Therefore, as far as this group is concerned, purchases of milk (inevitably at the expense of non-dairy foods) will actually result in a reduction in the total nutrients intake because of the relatively high cost of milk. According to Dr. Jul the Operation Flood Project is capable of being the largest and most successful nutritional project yet undertaken in India, not so much because the project increased, it doubled the incomes of about 1.3 million milk producers most of whom are small and marginal farmers and landless labourers, thereby enabling them to have two square meals a day instead of one.

In order to study the general consumption pattern and nutritional status in the cooperative and control villages, information was collected on the consumption expenditure of the households on food and non-food items, the average food intake of households per day and the awareness about balanced diet among the population. The consumption pattern and nutritional status of vulnerable sections/mothers were also studied.

Consumption expenditure was analysed in order to determine the share of expenditure on various items for different categories of

respondents in the cooperative and control villages. Cash expenses only were considered.

## 5.2 GUNTUR VILLAGES

### Expenditure on Food Items

Tables 5.1 and 5.2 indicate the expenditures incurred by the various categories of households in the cooperative and control villages. It can be seen from the tables that the total expenses incurred on food items is comparatively higher in the cooperative village than in the control village. This besides being indicative of greater purchasing power also portrays higher per capita consumption in <sup>the</sup> cooperative village. The expenditure on food items in the cooperative village is 46.59% of the total expenditure as against 34.08% in the control village. It is also interesting to note that the average monthly household expenditure of the landless group was higher for the cooperative village.

The proportion of expenses on cereals, pulses, fruits and vegetables were noticeably higher in the cooperative village though the expenditure on milk and milk products were higher in the control village. This indicates that home produced dairy products are used to a greater extent for own consumption in the cooperative village.

## 5.3 Non-food items :

The variation in expenditure on non-food items such as animal health care, travel and recreation was higher in the cooperative village though the expenditure on education, social and religious ceremonies were higher in the control group. This is a clear indication of higher purchasing power enjoyed by households in the cooperative village and

TABLE 5.1

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Pattern of household expenditure in the cooperative  
village in GUNTUR (Krishnayapalam)

ITEM	CATEGORY OF FARMERS					
	Land- less	0-2.5 acres	2.5-5 acres	5-10 acres	Above 10	All
Average monthly cash expenditure (Rs/hh)	481.44	573.86	602.73	766.13	873.02	681.21
Percentage expenditure on :						
Cereals	23.78	22.11	22.91	17.67	29.91	23.28
Pulses	7.81	6.23	5.96	4.61	5.79	6.08
Milk & Milk products	1.24	0.97	0.37	.67	0.59	.77
Fruits & Vege tables	3.93	3.41	3.06	3.15	3.24	3.35
Other Food items	12.11	9.63	11.72	12.36	13.93	11.95
Total food items	48.87	42.35	44.02	38.46	54.46	45.43
Health care	8.21	6.63	5.79	6.63	3.17	6.08
Education	.92	1.89	1.52	1.65	.71	1.33
Travel & Recrea- tion	6.21	5.62	7.98	6.01	1.96	5.55
Social & reli- gious ceremonies	4.73	4.92	8.33	8.89	6.69	6.71
Others	31.06	38.59	32.36	38.36	34.01	34.90

TABLE 5.2

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Pattern of household expenditure in the control  
village in GUNTUR (ABBARAJUPALEM)

ITEM	CATEGORY OF FARMERS					
	Land less	0-2.5 acres	2.5-5 acres	5-10 acres	Above 10	All
Average monthly cash expenditure (Rs./hh)	389.13	399.46	520.89	623.69	725.27	501.10
Percentage expenditure on:						
Cereals	20.16	12.62	7.27	3.86	4.39	9.66
Pulses	5.01	6.93	7.24	6.35	5.02	6.11
Milk & Milk products	2.72	1.64	2.01	1.79	1.49	1.93
Fruits & Vegetables	2.61	3.64	3.51	3.43	3.02	3.24
Other food items	16.10	15.58	14.00	13.42	12.38	14.30
Total food items	46.60	40.41	34.03	28.85	26.30	35.24
Health care	2.93	7.65	7.94	7.13	7.81	6.69
Education	0.41	0.59	2.47	3.24	6.83	2.72
Travel & recreation	5.00	5.73	6.18	6.24	8.10	6.25
Social & religious ceremonies	8.26	7.79	8.64	6.37	3.21	6.89
Others	36.80	37.83	40.74	48.17	47.50	42.21

also their ability to better their lot through awareness of the benefits of health care and education.

It was also found that the number of people dependent on borrowings from money-lenders was significantly higher in the control village thus increasing their expenditure on 'other items'. In the cooperative village however owing to regular payments for milk the farmers are able to meet their day-to-day expenditure and are even able to spend more on travel, recreation, education and health care, all of which contribute to enhanced economic status.

#### 5.4 SURAT VILLAGES

Food Items : The average monthly expenditure in the cooperative village was significantly higher in the cooperative village than in the control village. It is pertinent to note that the average expenditure for the landless households was relatively higher in the cooperative village when compared with their counter parts in the control village. The expenditure on cereals, pulses, fruits and vegetables were higher in the cooperative village while the expenditure on milk and milk products was significantly lower indicating again that the households have enough home produced products for their own consumption. Equally, significant is the higher purchasing power of households in the cooperative village.

#### 5.5 Non-food Items

The expenditure on health care was marginally higher in the cooperative village than in the control village, while that on education was significantly higher in the cooperative village thereby indicating the awareness of the benefits of education and the importance thereof. There was no significant difference in the expenditure on entertainment though it was marginally higher in the

TABLE - 5.3

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Pattern of household expenditure in the cooperative village in SURAT (ANAWAL)

ITEMS	CATEGORY OF FARMERS					
	Land less	0-2.5 acres	2.5-5 acres	5-10 acres	Above 10	All
Average monthly cash expenditure (Rs/hh)	388.86	456.27	502.73	823.37	866.73	561
Percentage expenditure on :						
Cereals	24.16	15.78	13.44	8.37	7.72	13.39
Pulses	2.86	2.96	1.93	1.71	1.87	2.27
Milk & Milk products	2.73	1.07	.61	-	-	.88
Fruits & Vegetables	3.85	5.41	4.36	5.27	5.13	4.80
Other food items	16.42	19.49	17.05	13.04	10.64	14.13
Total food items	50.02	44.71	37.39	29.39	25.36	35.97
Health care	4.63	5.78	6.02	8.37	5.06	5.97
Education	0.70	4.98	5.86	5.21	5.11	4.37
Travel & recreation	2.74	3.67	3.98	4.76	4.71	3.97
Social & religious ceremonies	19.20	20.98	19.39	29.86	30.40	23.97
Others	22.71	19.80	27.36	23.41	29.36	25.75

TABLE 5.4

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Pattern of household expenditure in the control  
village in SURAT (SUNVALLA)

ITEM	CATEGORY OF FARMERS					
	Land less	0-2.5 acres	2.5-5 acres	5-10 acres	Above 10	All
Average monthly cash expenditure (Rs./hh)	299	312.76	339.54	795.26	823.47	615.57
Percentage expenditure on :						
Cereals	17.79	16.83	12.17	7.08	6.29	12.03
Pulses	2.76	2.39	2.16	1.75	1.63	2.14
Milk & Milk products	2.10	1.63	1.79	1.21	1.50	1.65
Fruits & Vegetables	3.45	4.69	3.86	5.07	4.36	4.29
Other food items	27.21	24.09	25.42	25.60	8.15	22.09
Total food items	53.31	49.63	45.40	31.88	21.93	40.43
Health care	4.53	5.23	5.56	6.21	4.03	5.11
Education	0.31	.31	0.32	1.73	2.15	.97
Travel & Recreation	2.68	2.57	2.93	3.29	4.60	3.21
Social & religious ceremonies	7.86	8.93	9.73	12.67	21.55	12.15
Others	31.31	33.29	36.06	44.22	45.74	38.13



cooperative village. Expenditure on social and religious ceremonies was significantly higher in the cooperative village indicating that the households can afford such expenditures and therefore spend substantially more. The share of expenditures on 'other items' were substantially higher in the control village. The study revealed that this was on account of interest charges paid to money-lenders.

#### 5.6 BHOPAL VILLAGES

The average household expenditure did not show substantial variation across the two villages though there were some significant differences among certain groups. The landless group in the control villages spent the highest on food items alone and had very little to spend on other non-food items.

#### 5.7 Food Items

The households in the cooperative village spent marginally more on cereals, pulses, milk and milk products than their counterparts in the cooperative village. The expenditure on fruits and vegetables was substantially low in both the villages and there was no significant difference in both the villages. On the whole the average expenditure on food items was significantly higher in the control village while the expenditure on non-food items was proportionately lower indicating their inability to afford the facilities. The landless groups being dependent on the farm produced cereals of the landed groups spend a large percentage of their income on food this being more so in the control village. The expenditure on 'other items' in the control village was largely on account of illicit liquor and interest charges paid to money lenders.

TABLE 5.5

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Pattern of household expenditure in the cooperative  
village in BHOPAL (KHAIKHEDA)

ITEM	CATEGORY OF FARMERS					
	Land- less	0.2-5 acres	2.5-5 acres	5-10 acres	Above 10 acres	All
Average monthly cash expendi- ture (Rs/hh)	514.56	654.75	667.08	688.80	981.00	712.61
Percentage expenditure on :						
Cereals	38.62	36.97	37.28	33.41	30.31	35.32
Pulses	4.06	3.86	5.03	7.66	3.02	4.73
Milk & Milk products	.95	2.82	2.53	0.86	0.73	1.58
Fruits & Vegetables	2.17	2.39	2.16	1.83	1.97	2.10
Other food items	13.27	8.39	8.01	18.1	14.88	12.53
Total food items	59.07	54.43	55.01	61.86	50.91	56.26
Health care	0.93	1.82	2.41	1.89	2.59	1.93
Education	0.20	0.58	0.40	0.56	0.75	.50
Travel & recreation	2.86	2.54	1.81	1.23	1.02	1.89
Social & reli- gious ceremon- ies.	20.19	18.94	16.49	10.76	12.39	15.75
Others	16.75	21.69	23.88	23.70	32.34	23.67

TABLE 5.6

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Pattern of household expenditure in the control  
village in BHOPAL

ITEMS	CATEGORY		OF		FARMERS	
	Land- less	0-2.5 acres	2.5-5 acres	5-10 acres	Above 10	All
Average monthly cash expendi- ture (Rs/hh)	408.40	523.77	598.58	675.86	957.41	747.09
Percentage expenditure on :						
Cereals	41.48	37.19	38.73	34.32	27.13	35.77
Pulses	4.13	4.59	4.98	7.33	4.03	5.01
Milk & Milk products	.85	3.84	3.16	2.94	1.19	2.40
Fruits & Vege- tables	1.74	2.59	2.61	1.89	1.90	2.15
Other Food items	25.38	21.40	15.11	19.57	24.88	21.27
Total Food items	73.58	69.61	64.59	66.05	59.13	66.59
Health care	-	.85	.95	1.24	1.11	0.83
Education	-	.23	0.44	0.37	0.81	0.37
Travel & recrea- tion	2.98	2.24	1.89	1.18	1.22	1.90
Social & Reli- gious ceremonies	21.39	20.07	18.19	14.18	17.39	18.24
others	2.05	7.00	13.94	16.98	20.34	12.06

### 5.8 Non-food items

The expenditure on health care was substantially low in the control village than in the cooperative village. There were no significant differences in the expenditure on education, travel and recreation. However, the households in the control village spent more on social and religious ceremonies, while the households in the cooperative village were in a position to spend more on other items.

### 5.9 Consumption of Food items

An attempt was made to study the food habits of different categories of households in the cooperative and control villages. Tables 5.7, 5.8, 5.9, 5.10 and 5.12 reflect the diet pattern and are described below:-

### 5.10 Guntur Villages

Tables 5.7 and 5.8 indicate the diet pattern of the households in the cooperative and control villages respectively. Rice was a major item which was consumed by almost all the households in both the villages. Pulses, vegetables/fruits, fats and oils were also major food items in both the villages though these were consumed by a greater number of households consuming fluid milk and other milk products were higher in the cooperative village. The percentage of households consuming fluid milk and other milk products were higher in the cooperative village. A small percentage of households in all categories were non-vegetarians and this number was marginally higher in the cooperative village.

### 5.11 Surat Villages

Wheat, millets, vegetables, fats and oils were major food items consumed in both the Surat villages (Tables 5.9 and 5.10). The per-

TABLE 5.7

Percentage of households consuming different food items  
in the cooperative village in Guntur (KRISHNAYAPALAM)

ITEM	CATEGORY					
	Land less	0.2-5 acres	2.5-5 acres	5-10 acres	Above 10 acres	All
Rice	100	100	100	100	100	100
Wheat	-	-	-	-	-	-
Milletts	18	24	31	26	15	23
Pulses	93	94	94	100	100	96
Vegetables	76	87	86	91	90	86
Fruits	17	20	26	32	40	27
Fats & Oils	98	97	100	100	100	99
Sugar & Jaggary	91	94	97	100	100	96
Eggs	2	7	5	6	10	6
Fish/Meat	2	6	7	7	8	6
Fluid Milk	94	97	100	100	100	98
Curd	48	59	67	74	66	63
Butter Milk	6	12	22	36	44	24
Ghee/Butter	-	2	5	7	6	4

TABLE 5.8

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Percentage of households consuming different food items  
in the control village in Guntur (ABBARAJUPALAM)

ITEM	CATEGORY					
	Landless	0.2-5 acres	2.5-5 acres	5-10 acres	above 10	All
Rice	92	92	98	100	100	96
Wheat	-	-	-	-	-	-
Milletts	16	18	20	19	23	19
Pulses	91	93	95	97	100	95
Vegetables	70	79	81	84	96	82
Fruits	18	19	23	26	34	24
Fats & Oils	89	91	100	100	100	96
Sugar & Jaggery	92	95	95	100	100	96
Eggs	1	4	6	5	5	4
Fish/Meat	2	5	5	6	6	5
Fluid Milk	80	83	96	100	100	92
Curd	45	56	59	69	63	60
Butter Milk	4	8	12	19	23	13
Ghee/Butter	-	-	2	6	7	3

TABLE 5.9

Percentage of households consuming different food  
items in the cooperative village in Surat

ITEMS	CATEGORY					
	Landless	0-2.5 acres	2.5-5 acres	5-10 acres	Above 10	All
Rice	25	28	26	32	60	34
Wheat	50	45	83	89	100	73
Milletts	83	89	85	60	-	63
Pulses	28	38	54	53	100	55
Vegetables	60	58	67	65	100	70
Fruits	2	3	5	12	30	10
Fats & Oils	75	86	93	97	100	90
Sugar & Jaggary	83	93	98	98	100	94
Eggs	1	-	-	-	-	-1
Fish/Meat	2	-	-	-	-	1
Curd	1	3	2	2	2	2
Fluid Milk	89	100	100	100	100	98
Butter Milk	60	73	75	73	61	68
Butter Milk	60	73	75	73	61	68
Ghee/butter	26	45	60	71	100	60

TABLE 5.10

Percentage of households consuming different food  
items in the control village in Surat

ITEMS	CATEGORY					
	Landless	0-2.5 acres	2.5-5 acres	5-10 acres	Above 10	All
Rice	16	15	12	30	100	35
Wheat	28	24	50	59	87	50
Millets	69	74	79	57	49	66
Pulses	30	35	51	44	100	52
Vegetables	47	55	59	63	100	65
Fruits	-	2	4	6	13	5
Fats & Oils	71	81	83	86	100	84
Sugar & Jaggary	68	91	95	98	100	90
Eggs	-	-	-	-	-	-
Fish/Meat	2	-	-	-	-	1
Fluid Milk	76	91	93	97	100	91
Curd	-	-	-	-	-	-
Butter Milk	49	58	48	51	57	53
Ghee/butter	-	18	29	36	70	31



centage of households consuming these items were higher in the cooperative village. Equally significant is the high consumption of fluid milk and milk products which in comparison is quite low in the control village. The households of both the villages were predominantly vegetarians. The percentage of households consuming eggs, fish and meat was insignificant and was restricted only to the landless group. There was no significant difference in <sup>the</sup> percentage of households consuming fats, oils, sugar and jaggery.

#### 5.12 Bhopal Villages

Wheat was a major food item consumed by almost all the categories of households in both the villages (Table 5.11 and 5.12). Rice was rarely consumed though millet consumption was higher. Pulses, vegetables, fats and oils were also major consumption items in both the villages with a greater percentage of households consuming these in the cooperative village. There was no significant difference in the consumption of sugar and jaggery and households in both the villages consumed substantial quantities of sugar and jaggery. Consumption of milk and milk products were significantly higher in the cooperative village. A small percentage of households in all the categories were non-vegetarians. While the vegetable consumption was relatively high in both the villages, the fruit consumption was comparatively low.

#### 5.13 Nutritional value in terms of calories & proteins

This study has shown that the income elasticity of intake of nutrients among rural groups of the lowest income rungs is very high. ?  
Operation Flood, by providing a regular market and a better price

TABLE 5.11

Percentage of households consuming different food  
items in the cooperative village in Bhopal

ITEMS	CATEGORY					
	Landless	0-2.5 acres	2.5-5 acres	5-10 acres	Above 10	All
Rice	-	6	-	4	13	5
Wheat	96	100	100	100	100	99
Milletts	15	17	23	19	29	71
Pulses	75	77	73	68	90	77
Vegetables	63	69	87	85	89	79
Fruits	2	4	4	5	10	5
Fats & Oils	60	63	79	89	100	78
Sugar & Jaggary	89	97	99	100	100	77
Eggs	2	3	5	7	4	4
Fish/Meat	2	4	3	5	4	4
Fluid Milk	70	73	88	96	100	85
Curd	22	20	25	23	60	30
Butter Milk	40	44	50	49	60	49
Ghee/butter	7	9	23	29	58	25

TABLE 5.12

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Percentage of household consuming different food  
items in the control village in Bhopal

ITEM	CATEGORY					
	Landless	0-2.5 acres	2.5-5 acres	5-10 acres	Above 10	All
Rice	-	-	-	-	-	-
Wheat	98	100	100	100	100	100
Millets	8	10	11	12	10	10
Pulses	43	48	59	59	63	54
Vegetables	33	66	73	84	80	67
Fruits	-	-	1	4	5	2
Fats & Oils	44	58	65	66	69	60
Sugar & Jagary	83	91	92	100	100	93
Eggs	1	3	3	5	4	3
Fish/Meat	1	2	3	4	5	3
Fluid Milk	40	45	55	70	100	62
Curd	-	10	18	21	23	14
Butter Milk	29	33	46	57	51	43
Ghee/butter	-	2	18	22	21	13

for surplus milk has increased the purchasing power of the rural poor. They can use the proceeds from the sale of milk for purchase of less expensive staple food. This study has proved that the weaker sections in villages with dairy cooperatives produce more milk than their counterparts in the control villages. Also, milk producers in villages with cooperatives consume more milk per head than their counterparts in the control villages. It has been estimated that the project has helped to improve the nutritional levels of the rural population by about 30-40%.

#### 5.14 Guntur Villages

The principal sources of calories in the cooperative village were cereals, pulses, flesh foods, sugar and jaggery (Tables 5.13 and 5.14). Cereals contributed around 77% of the total intake. The lower categories consumed a higher percentage of cereals but the percentage was found to reduce as land holding size increased. The reverse was true where pulses, milk and milk products were concerned. Rice was the main foodgrain and the per capita consumption of this item was very high.

The consumption of all food items in general was significantly higher and more balanced in the cooperative village. It is significant to note that the food intake of the landless group was the highest (i.e 3657 calories of various food items and 78 gms per day of proteins). This indicates the extent of substitution between food items among the landless group in the cooperative village. The regular flow of income from sale of milk has enhanced their choice of food items. This group maximised the total calorie intake from food by consuming more of items having high calorific value.



**TABLE 5.14** Calorie & Protein Intake from different food items in the control village in GUNTUR (ABBARAJUPALEM & DONDAPADU)

Category	Food Items						Calories/day		
	Cereals	Pulses	Milk & Milk Products	Fruits & Vegetables	Meat/Fish	Fats & Oils	Sugar & Jaggary	TOTAL	
Landless	1783 (82.66)	43 (1.99)	21 (.97)	14 (0.65)	79 (3.66)	116 (5.38)	101 (4.68)	2157 (100)	
0-2.5 acres	1794 (81.29)	47 (2.13)	84 (3.81)	18 (0.92)	23 (1.04)	118 (5.35)	123 (5.57)	2207 (100)	
2.5-5 acres	2050 (81.54)	54 (2.15)	125 (4.97)	21 (0.84)	12 (0.48)	121 (4.81)	131 (5.21)	2514 (100)	
5-10 acres	2279 (80.44)	51 (1.80)	184 (6.49)	23 (0.81)	18 (0.64)	123 (2.34)	155 (5.47)	2833 (100)	
Above 10 acres	1863 (75.55)	46 (1.87)	170 (6.89)	20 (0.81)	25 (1.01)	169 (6.85)	173 (7.02)	2466 (100)	
PROTEIN INTAKE (IN GMS)									
Landless	32 (72.72)	4 (0.09)	1 (2.27)	1 (2.27)	1 (13.64)	-	-	44 (100)	
0-2.5 acres	35 (71.43)	5 (10.20)	3 (6.12)	1 (2.04)	5 (10.20)	-	-	49 (100)	
2.5-5 acres	43 (71.67)	6 (10.00)	5 (8.33)	2 (3.33)	4 (6.67)	-	-	60 (100)	
5-10 acres	47 (71.21)	6 (9.09)	6 (9.09)	2 (3.03)	5 (7.58)	-	-	66 (100)	
Above 10 acres	44 (74.57)	5 (8.47)	5 (8.47)	1 (1.69)	4 (6.78)	-	-	59 (100)	

\* Figures in parenthesis indicate percentages.

#### 5.15 Protein Intake

Consumption of proteins by all categories of people in the cooperative village was almost double when compared to the consumption in the control village. Protein intake increased marginally with the increase of land holdings.

While the milk/milk product intake of the landless group in the control village was significantly low, the milk consumption of other categories was only marginally lower than the cooperative village. This could be mainly because of lack of marketing channel for milk in the control village. The households, therefore, retain larger quantities of milk which is more of a source of energy than of protein. In the cooperative village proteins are provided through greater intake of several food items which have been purchased from the sale proceeds of milk.

#### 5.16 Surat Villages

As indicated in Tables 5.15 and 5.16 the intake of various food items was much higher in the cooperative village than in the control village. Cereals were the main items which constituted around 80% of the total food intake. In both the villages the calorie intake increased with the land holding size for all food items. The average per capita consumption of all food items in the cooperative village was much higher.

#### 5.17 Protein Intake

In general the per capita protein intake was also much higher in the cooperative village. The landless group of the cooperative

TABLE 5.15

Calorie and protein intake from different food items in the Cooperative village in SURAT

(Calories / day)

## FOOD ITEMS

Categories	Cereals	Pulses	Milk & milk Products	Fruits & Vegeta- bles	Meat/ Fist	Fats & Oils	Sugar & Jaggary	TOTAL
Landless	1356 (81.05)	27 (1.61)	111 (6.63)	19 (1.13)	-	89 (4.72)	81 (4.84)	1673 (100)
0-2.5 acres	1974 (85.09)	33 (1.42)	134 (5.78)	24 (1.03)	-	76 (3.28)	79 (3.41)	2320 (100)
2.5-5 acres	2496 (83.14)	97 (3.23)	151 (5.03)	25 (0.83)	-	115 (3.83)	118 (3.93)	3002 (100)
5-10 acres	2293 (74.79)	123 (4.01)	312 (10.18)	46 (1.5)	-	153 (4.99)	139 (4.53)	3066 (100)
Above 10 acres	2386 (75.53)	141 (4.46)	328 (10.38)	44 (1.39)	-	134 (4.24)	126 (3.99)	3159 (100)

## PROTEIN INTAKE IN GMS

Landless	39 (81.25)	2 (4.17)	5 (10.42)	2 (4.17)	-	-	-	48 (100)
0-2.5 acres	56 (86.15)	2 (3.08)	5 (7.69)	2 (3.08)	-	-	-	65 (100)
2.5-5 acres	79 (85.87)	5 (5.43)	6 (6.52)	2 (2.17)	-	-	-	92 (100)
5-10 acres	74 (77.89)	10 (10.53)	8 (8.42)	3 (3.16)	-	-	-	95 (100)
Above 10 acres	82 (79.61)	9 (8.74)	10 (9.71)	2 (1.94)	-	-	-	103 (100)

FIGURES IN PARENTHESES INDICATE PERCENTAGES



TABLE 5.16

Calorie &amp; Protein Intake from different food items in the control village in SURAT.

Category	FOOD ITEMS							Calories/day	
	Cereals	Pulses	Milk & Milk products	Fruits & Vegetable tables	Fish/Meat	Fats & Oils	Sugar & Jaggary	TOTAL	
Landless	1183 *(83.31)	24 (1.69)	79 (5.56)	7 (0.49)	- (5.35)	76 (5.35)	51 (3.59)	1420 (100)	
0-2.5 acres	1586 ( 87 )	16 (0.88)	81 (4.44)	9 (.49)	-	61 (3.34)	70 (3.84)	1823 (100)	
2.5-5 acres	1236 (77.78)	51 (3.21)	79 (4.97)	17 (1.07)	-	98 (6.16)	108 (6.80)	1589 (100)	
5-10 acres	1949 (79.39)	64 (2.61)	170 (6.92)	27 (1.10)	-	124 (5.05)	121 (4.98)	2455 (100)	
Above 10 acres	2364 (78.25)	79 (2.62)	310 (10.26)	36 (1.19)	-	118 (3.91)	114 (3.77)	3021 (100)	
PROTEIN INTAKE (IN GMS)									
Landless	34 (87.18)	2 (5.12)	3 (7.69)	-	-	-	-	39 (100)	
0-2.5 acres	46 (48.46)	2 (3.85)	3 (5.77)	1 (1.92)	-	-	-	52 (100)	
2.5-5 acres	55 (87.30)	3 (4.76)	4 (6.35)	1 (1.59)	-	-	-	63 (100)	
5-10 acres	51 (83.61)	3 (4.92)	5 (8.20)	2 (3.28)	-	-	-	61 (100)	
Above 10 acres	64 (77.11)	4 (4.82)	6 (7.23)	9 (10.84)	-	-	-	83 (100)	

\* Figures in parenthesis indicate percentages.

village consumed significantly higher quantities of milk and milk products than their counterparts in the control village. This is significant in as much as it is vital to the vulnerable groups which include children, expectant and nursing mothers. The positive effect of Operation Flood is again reflected here.

#### 5.18 Bhopal Villages

The Cooperative village had a higher level of calories and proteins intake as compared to control village (Table 5.17 & 5.18). The major sources of calories in both the villages were cereals, milk and milk products and sugar and jaggery. In the cooperative village the percentage of these were around 73%, 8-9% and 7.5% respectively while in the control village they were 77, 6.63 and 8.53% respectively.

The milk/milk product intake was significantly higher in the cooperative village and so was the intake of other food items. In both the villages the calorie intake from all items increased with land holding size. This is true also of protein intake. The inference that follows is that households in the cooperative village are able to consume larger quantities of food items having high calorific value and this has been facilitated through regular flow of income from milk sales.

TABLE 5.17 Calorie & Protein Intake from different food items in the cooperative village in BHOPAL

CATEGORY	FOOD ITEMS							Total
	Cereals	Pulses	Milk & Milk Products	Fruits & Vegetable tables	Fish & Meat	Fats & Oils	Sugar & Jaggary	
Landless	1779 (76.91)	126 (5.45)	169 (7.31)	11 (0.48)	2 (0.09)	77 (3.33)	149 (6.44)	2313 (100)
0-2.5 acres	1841 (73.73)	119 (4.77)	179 (7.17)	22 (0.88)	3 (0.12)	90 (3.60)	243 (9.73)	2497 (100)
2.5-5 acres	1963 (70.41)	134 (4.81)	298 (10.69)	39 (1.40)	5 (0.18)	115 (4.12)	234 (8.39)	2788 (100)
5-10 acres	2389 (72.55)	189 (5.79)	310 (9.41)	24 (0.73)	18 (0.55)	124 (3.77)	239 (7.26)	3293 (100)
above 10 acres	2547 (72.44)	194 (5.52)	343 (9.76)	44 (1.25)	22 (0.63)	136 (3.87)	230 (6.54)	3516 (100)
PROTEIN INTAKE IN GMS								
Landless	83 (79.80)	10 (9.62)	10 (9.62)	1 (0.96)	-	-	-	104 (100)
0-2.5 acres	85 (77.98)	11 (10.09)	11 (10.09)	1 (0.92)	1 (0.92)	-	-	109 (100)
2.5-5 acres	74 (76.28)	9 (9.28)	10 (10.31)	1 (1.03)	3 (3.09)	-	-	97 (100)
5-10 acres	79 (70.54)	14 (12.50)	14 (12.50)	1 (0.89)	4 (3.57)	-	-	112 (100)
Above 10 acres	87 (73.73)	12 (10.17)	13 (11.02)	1 (0.85)	5 (4.24)	-	-	118 (100)

\*Figures in parenthesis indicate percentages.

TABLE 5.18

Calorie &amp; Protein Intake from different food items in the Control Village in BHOPAL

Category	FOOD ITEMS							(Calories/day)		
	Cereals	Pulses	Milk & milk products	Fruits & Vegetables	Fish & Meat	Fats & Oils	Sugar & Jaggary	TOTAL		
Landless	1597 (80.98)	39 (1.98)	123 (6.24)	2 (0.10)	1 (0.05)	74 (3.74)	136 (6.90)	1972 (100)		
0-2.5 acres	1684 (75.99)	79 (3.56)	112 (5.05)	14 (0.63)	2 (0.09)	86 (3.88)	239 (10.79)	2216 (100)		
2.5-5 acres	1833 (73.97)	66 (2.69)	184 (7.51)	26 (1.06)	2 (0.09)	120 (4.90)	240 (9.79)	2451 (100)		
5-10 acres	2266 (76.76)	63 (2.13)	224 (7.59)	36 (1.22)	3 (0.10)	124 (4.21)	236 (7.99)	2952 (100)		
Above 10	2474 (76.59)	119 (3.68)	219 (6.78)	47 (6.78)	5 (0.15)	134 (4.15)	232 (7.18)	3230 (100)		
PROTEIN INTAKE (IN GMS)										
Landless	33 (76.74)	3 (6.98)	7 (16.28)	-	-	-	-	43 (100)		
0-2.5 acres	56 (80.00)	6 (8.57)	7 (10.0)	1 (1.43)	-	-	-	70 (100)		
2.5-5 acres	58 (78.38)	7 (9.46)	8 (10.81)	1 (1.35)	-	-	-	74 (100)		
5-10 acres	73 (82.02)	5 (5.62)	10 (11.24)	1 (1.12)	-	-	-	89 (100)		
Above 10 acres	79 (79.79)	8 (8.08)	11 (11.11)	1 (1.01)	-	-	-	99 (100)		

FIGURES IN PARENTHESES INDICATE PERCENTAGES