Study No. 66

ECONOMIC VIABILITY OF SMALL AND MARGINAL FARMS POTENTIALITIES FOR INCREASING EMPLOYMENT AND INCOME

(A Study in Jabalpur and Balaghat Districts, Madhya Pradesh)

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CHAPTER I

INTRODUCTION

1.1 Introductory

In India the basic production unit of agriculture - The farm or the operational holding - is of small size. Of 97,732 thousand land holdings 58.0 per cent were marginal (below 1 hectare) and 18.3 per cent were small (between 1 to 2 hectares). Together, these formed 76.3 per cent. However, these commanded only 28.8 per cent of the total land. The medium size holdings formed 21.7 per cent of the total number but commanded 51.0 per cent of the area. The large size holdings, on the other hand, were only 2.0 per cent in number but had 20.0 per cent area under these.

In Madhya Pradesh the situation was similar. It was observed that 57.1 per cent of the total number were marginal and small holdings but had only 16.1 per cent of the total area. On the other hand, medium size farms although formed 38.0 per cent of the total number commanded 55.7 per cent of the total area. Further, the large farms (above 10 hectares) although formed only 4.9 per cent of the total number had under these 28.2 per cent of the total area. (Table 1.1)

Table 1.1 Distribution of number and area operated by broad categories of land holdings, India and Madhya Pradesh 1985-86

Category	Madhya Pradesh				India			
	Number (Thousand)	%	Area Operated (000ha.)	%	Number (Thousand)	%	Area Operated (000ha.)	%
Marginal (Below 1 ha.)	2,733	35.9	1,214	5.5	56,748	58.0	21,606	13.2
Small (1 - 2 ha.)	1,613	21.2	2,353	10.6	17,881	18.3	25,533	15.6
Medium (2 - 10 ha.)	2,885	38.0	12,335	55.7	21,174	21.7	83,587	51.0
Large (10ha. &above)	373	4.9	6,253	28.2	1,929	2.0	33,187	20.2
Total	7,604	100.0	22,155	100.0	97,732	100.0	1,63,913	100.0

Source: Agril.Situation in India 1990

Despite all efforts and planning for economic development bulk of the owners of the classes of marginal and small farmers remained poor, living with lower than the minimum standards of consumption per capita. The magnitude of problems of small and marginal farms and their absolute number differed from one region to another and even from district to district. The main causes of poverty among small and marginal farmers were (a) low resource base and inability to take advantage of modern agricultural technology and to develop well organised subsidiary occupation to improve their income, and, (b) though numerically these groups together represented more than half (57.1 per cent) of the total rural population their operational holdings were very small with low or negligible production/marketed surpluses. These marginalised them politically.

Therefore, it is desirable to look into the present structure of small and marginal farms with a view to examine the extent to which they can be strengthened not only by improving the productivity on farms but also by combining supplementary activities to increase their income and employment in the years to come. With this broad objective in mind the present study was taken up at the instance of the Directorate of Economics & Statistics, Ministry of Agriculture, Govt.of India.

1.2 Objectives

The main objectives of the study were;

1. To examine the characteristics of small and marginal farms with special reference to the ownership, utilisation and productivity of resources.
2. To study the profitability on small and marginal farms including cultivation and allied sectors of selected households.

3. To identify the farms which are economically viable/ unviable under different agro-climatic conditions, and,

4. To suggest various measures/strategies that could be used for imparting viability to the non viable farms.

1.3 Methodology

1.3.1 Conceptual Frame work For the Study

"Marginal farmers are those whose holdings at present level of productivity, are too small to provide an adequate standard of living and whose per capita income can not be brought up to the minimum required level without combining additional enterprises" and "Small farmers are those who holdings at present level of productivity provide a standard of living at the bare margin of subsistance but where future farm productivity increase could definitely provide an adequate standard of living". These farmers are classified as those who are having holdings up to 1 hectare and between 1 to 2 hectares respectively.

Economically viable farm was defined as "the farm which could provide an income required for the minimum maintenance of the family".

1.3.2 Sampling Design and Coverage

Since the characteristics of small and marginal farms depended on agro-climatic situations the study covered two most important agro-climatic regions of the state. These regions were -

(1) Chhattisgarh plains including Balaghat district, and

(2) Kymore Plateau and Satpura Hills

One district each from the two selected regions was selected on the basis of maximum number of marginal and small farms. Such districts were Balaghat from Chhattisgarh Plains region and Jabalpur from Kymore Plateau and Satpura Hills region.

From the selected districts a block each was selected on the basis of maximum number of small and marginal farms. From each of the selected blocks five villages were selected randomly. Thereafter, lists of households from each of the selected villages were prepared. From these lists 10 households per village were selected randomly with probability proportional to the number in marginal, small and medium size groups. Thus in all 100 sample farms were selected for in depth study.

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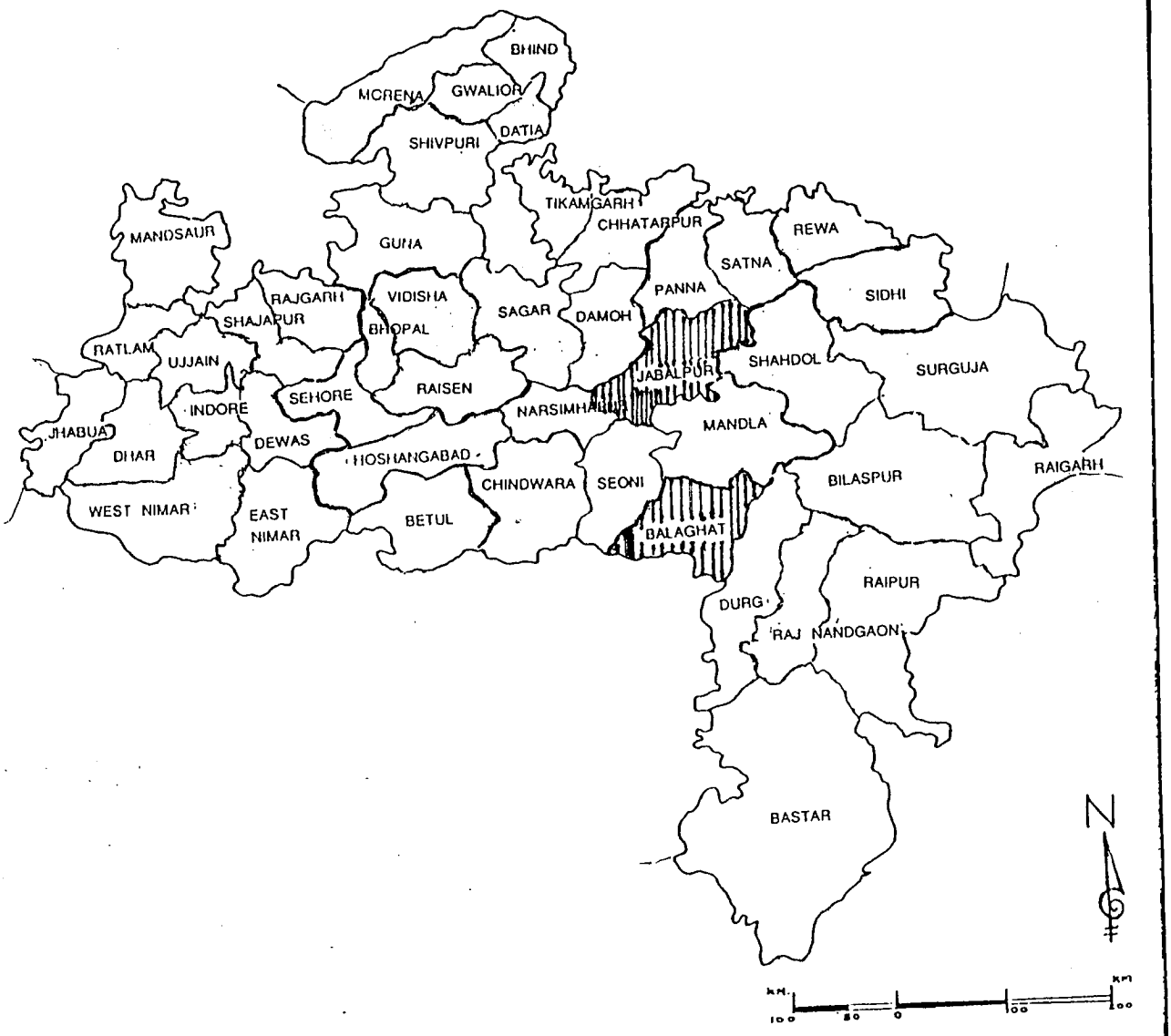
Jabalpur & Balaghat Districts, Madhya Pradesh



CHAPTER II

THE SELECTED DISTRICTS

As mentioned earlier, two districts namely Balaghat and Jabalpur were selected for the study. A brief description of these would be useful.

The description of Balaghat district is given below. The description of Jabalpur district follows thereafter.

2.1 Balaghat District

2.1.1 Location

Balaghat district is situated in the south of Jabalpur Revenue Division, between 21°19' and 22°24' north latitudes and 79°39' and 81°03' east longitudes. The district is bounded in the east by Rajnandgaon district, in the north by Mandla district and in the west by Seoni district. Bhandara district of Maharashtra forms common boundary of the district in the south. The district is spread over 922.3 thousand hectares.

2.1.2 Population

The population of Balaghat district was 11,47,812. Nearly 91 per cent of it was rural and the remaining 9 per cent, urban. Scheduled castes and scheduledtribes were 7.17 and 21.83 per cent respectively as against the state average of 14.10 and 22.97 per cent respectively. Thus the proportion of scheduled castespopulation in the district was about half that of the state. The literacy percentage was 22.89 as against 29.87 for the state.

2.1.3 Climate

The climate of the district is moderate. The maximum temperature is 45°C in May, while the minimum is 4.0°C in December.

2.1.4 Rainfall

The district gets rainfall from south-west monsoon. The rains start some time in the second week of June. The average annual rainfall of the district is 1,274 mm. and occurs in 66 rainy days. The district receives 85.5 per cent of annual rainfall during the monsoon months of June, July, August and September. July is the rainiest month.

2.1.5 Rivers

The hills of the south of the plateau form a watershed between the Narmada river in the north and Vainganga river to the south. Banjar, Halon, Jamunia, Tanner and Kanhar are the principal rivers belonging to the Narmada system. Surathi a tributary of Wainganga is also an important river of the district. Bagh and its tributary Deo-Sin and Ghirsi drain the country east of Wainganga.

2.1.6 Soils

The soils of the district vary from light, sandy, and alluvial to black.

2.1.7 Land Use

Land utilisation classification showed that 29.85 per cent of the geographical area was net area sown. Another 13.64 per cent of the area was not available for cultivation and forest covered 45.45 per cent of the area (Table 2.1)

Table 2.1 Land utilisation, Balaghat district

S. No.	Particulars	Area ('000 hectares)	Percentage to geographical area (%)
1.	Forest	419.2	45.45
2.	Land not available for cultivation	125.8	13.64
3.	Other uncultivated land excluding follow	47.9	5.19
	(a) Permanent Pastures & Grazing lands	47.7	5.17
	(b) Land under miscellaneous	0.2	0.02
4.	Cultivable waste land	25.0	2.71
5.	Total fallow land	29.1	3.16
6.	Net area sown	275.3	29.85
Total Geographical Area		922.3	100.00

2.1.8 Irrigation

The district had a substantially larger percentage(36.52) of irrigated area to total cropped area than that of the state average (12.9). The chief sources of irrigation were canals(62.31 per cent) and tanks (26.44 per cent). These commanded nearly 90 per cent of the irrigated area. Wells (8.36) and other sources (2.89 per cent) were other minor sources of irrigation. (Table 2.2)

Table 2.2 Area irrigated by different sources, Balaghat district

Source	Irrigated area (thousand hectares)	Percentage to total
1. Canals	82.0	62.31
2. Tanks	34.8	26.44
3. Wells	11.0	8.36
4. Other sources	3.8	2.89
Total	131.6	100.00

2.1.9 Cropping Pattern

Food crops dominated the cropping pattern of the district with as high as 91.31 per cent area under these. Among food crops cereals and millets occupied 77.43 per cent and pulses 11.85 per cent. Paddy contributed nearly 65 per cent area as compared to wheat which occupied only 6.35 per cent. Among non food crops only linseed was of some significance constituting 7.24 per cent of gross cropped area. (Table 2.3)

Table 2.3 Cropping pattern, Balaghat district

Crop	Area (000 hectares)	Percentage to gross cropped area (%)
Paddy	234.0	64.94
Jowar	0.6	0.17
Maize	4.6	1.28
Wheat	22.9	6.35
Other Cereals & Millets	16.9	4.69
Total Cereals & Millets	279.0	77.43
Gram	7.6	2.11
Tur	2.4	0.67
Other pulses	32.7	9.07
Total pulses	42.7	11.85
Total food grains	321.7	89.28
Sugarcane	2.6	0.72
Total spices	1.4	0.39
Total fruits	0.3	0.08
Total vegetables	3.0	0.84
Total fruits & Vegetables	3.3	0.92
Total food crops	329.0	91.31
Sesamum	0.8	0.22
Soybean	0.3	0.08
Rapeseed & Mustard	3.3	0.92
Linseed	26.1	7.24
Other Oilseeds	0.3	0.08
Total Oilseeds	30.8	8.55
Total Fibres	0.4	0.11
Total Fodder Crops	0.1	0.03
Total non-food crops	31.3	8.69
Gross cropped Area	360.3	100.00

2.1.10 Irrigated Cropped Area

Of the gross cropped area of 360.3 thousand hectares 131.6 thousand hectares or 36.52 per cent were irrigated. Of the total irrigated area, paddy alone occupied 89.67 per cent and wheat, 5.92 per cent. If we take into account the percentage of irrigated area to crop area sugarcane ranked first with 96.15 per cent irrigated area. Spices were irrigated to the extent of 71.43 per cent. Total fruits and vegetables were irrigated to the extent of 60.60 per cent. A little over 50 per cent (50.43 per cent) of the area under paddy was irrigated followed by wheat, 34.06 per cent.

Table 2.4 Cropwise irrigated area, Balaghat district

Crop	Irrigated area ('000 ha.)	Percentage to gross irrigated area	Cropped area ('000 ha.)	Percentage of irrigated area to cropped area
Paddy	118.0	89.67	234.0	50.43
Wheat	7.8	5.92	22.9	34.06
Total Cereals	125.8	95.59	279.0	45.09
Total pulses	0.2	0.15	42.7	0.47
Total foodgrains	126.0	95.74	321.7	39.17
Sugarcane	2.5	1.90	2.6	96.15
Total spices	1.0	0.76	1.4	71.43
Total fruits & Vegetables	2.0	1.52	3.3	60.60
Total food crops	131.5	99.92	329.0	39.97
Total non-food crops (Fodder only)	0.1	0.08	31.3	0.32
Gross irrigated area	131.6	100.00	360.3	36.52

2.1.11 Size of Holdings

There were 2,01,212 operational holdings covering 3,23,214 hectares in the district. Thus the average size of holdings was 1.60 hectares. The distribution of area was very unequal. More than three fourths (75.3 per cent) of the total number of holdings commanded less than 2 hectares each and occupied only 30.9 per cent of the land. Whereas, one fourth (24.7 per cent) of the total number of holdings commanded more than 2 hectares each and occupied only 30.9 per cent of the land. Whereas one fourth (24.7 per cent) of the total number of holdings commanded more than 2 hectares each and occupied as high as 69.1 per cent of land.

Table 2.5 Number and area of operational holdings, Balaghat district

Size group (Hectares)	Number of Operational holdings		Area under Operational holdings	
	Number	Percentage to total	Area (Hectares)	Percentage to total
Up to 1.00 (marginal)	1,12,133	55.7	43,748	13.5
1.01 to 2.00 (small)	39,499	19.6	56,163	17.4
2.01 to 4.00 (semi medium)	29,316	14.6	80,176	24.8
4.01 to 10.00(medium)	17,768	8.8	1,04,706	32.4
10.01 & above(large)	2,496	1.3	38,421	11.9
Total	2,01,212	100.00	3,23,214	100.0
Average size of holdings (hectares)			1.60	

Source : Agricultural Census- 1985-86

2.2 Jabalpur District

2.2.1 Location

Lying between 22°49' and 24°8' north latitudes and 78°21' and 80°58' east longitudes, Jabalpur is one of the central districts of Madhya Pradesh. The tropic of cancer passes through the middle of the district and divides it into two equal halves. The shape of the district viewed from its north-west to south-east axis gives the appearance of a butterfly with its wings spread out and approximates a ractangle. Its greatest length from south-west to north east is 193.1 km. and its maximum width from west to east is 115.87 km. It is bounded on the north by Panna district, on the north east by Satna district, on the east by Shahdol district, on the south-east by Mandla district, on the south by Mandla and Seoni districts, on the south west by Narsinghpur district and on the west and north-west by Damoh district. The district covers an area of 10,122 sq.km.

2.2.2 Population

The population of Jabalpur district was 21,98,743. Nearly 55 per cent of it was rural and the remaining 45 per cent, urban. Scheduled castes and scheduled tribes were 12.20 per cent and 17.44 per cent respectively as compared to the state average of 14.1 per cent and 22.97 per cent respectively. The literacy percentage was 41.0 as against 29.87 for the state.

2.2.3 Climate

The climate of the district was on the whole, pleasant and salubrious. December and January were the coldest months with a minimum mean temperature at 8°C. May was the hottest month with mean temperature at 45°C.

2.2.4 Rainfall

The average annual rainfall of the district was 1,274.1mm. and occured in about 60 rainy days. The district received 88 per cent of the annual rainfall during the monsoon months of June, July, August and September. July being the rainiest month.

2.2.5 Rivers

The Narmada, the principal river of the district, and its tributaries, Hiran and Gaur drained the southern part of the district. Niwar and Katni rivers were other small rivers which joined Mahanadi. While Pariat, also a small river in Jabalpur and Sihora tehsils joined the Hiran. Ken rising from the Kymore ranges flowed for only a short distance in the district.

2.2.6 Land Use

Of the total geographical area of 1,012.4 thousand hectares 41.92 per cent was net area sown. Forests occupied 15.64 per cent and land not available for cultivation, 14.00 per cent. Uncultivated land excluding fallow was 9.97 per cent and culturable waste land, 7.25 per cent. This class is commonly known as wasteland. (Table 2.6)

Table 2.6 Land use classification, Jabalpur district

Particulars	Area ('000 hectares)	Percentage to total geographical area
1. Forests	158.3	15.64
2. Land not available for cultivation	141.7	14.00
3. Other uncultivated land excluding follow land.	101.0	9.97
a) Permanent pasture and other grazing land	99.8	9.86
b) Land under miscelleneous tree crops & groves	1.2	0.11
4. culturable wasteland	73.4	7.25
5. Fallow land	113.6	11.22
6. Net area sown	424.4	41.92
Total geographical area	1,012.4	100.00

2.2.7 Irrigation

Of the gross cropped area of 492.9 thousand hectares 62.1 thousand hectares or 12.6 per cent was irrigated. Among the different sources wells were most important and commanded 46.06 per cent. Canals commanded 15.94 per cent followed by tubewells (14.49 per cent). Other sources commanded 23.03 per cent. (Table 2.7)

Table 2.7 Area irrigated by different sources, Jabalpur district

(Area- '000 hectares)

	Sources	Irrigated area	Percentage to total
1.	Canals	9.9	15.94
2.	Tanks	0.3	0.48
3.	Tubewells	9.0	14.49
4.	Wells	28.6	46.06
5.	Other Sources	14.3	23.03
	Total	62.1	100.00

2.2.8 Cropping Pattern

Jabalpur district came under paddy- wheat zone of the state, and rightly so, because paddy accounted for 25.42 per cent of the cropped area and wheat, 25.46 per cent. The third important crop was gram which accounted for 14.87 per cent of the gross cropped area. Kodo, kutki and other minor millets claimed 6.35 per cent.

The cropping pattern of the district was food crops oriented. These shared 91.01 per cent of the gross cropped area against 8.99 per cent under non food crops. (Table 2.8)

Table 2.8 Cropping pattern, Jabalpur district

Crop	Area ('000 hectares)	Percentage to gross cropped area
Paddy	125.3	25.42
Jowar	13.5	2.75
Maize	8.8	1.78
Wheat	125.5	25.46
Other cereals and Millets	31.3	6.35
Total Cereals	304.4	61.76
Gram	73.3	14.87
Tur	8.6	1.74
Other pulses	51.7	10.49
Total pulses	133.6	27.10
Total Foodgrains	438.0	88.86
Sugarcane	0.2	0.04
Total spices	0.8	0.16
Total Fruits	4.7	0.95
Total Fruits & Vegetables	9.6	1.95
Total Food crops	448.6	91.01
Sesamum	5.8	1.17
Soybean	14.9	3.02
Rapeseed & Mustard	5.5	1.12
Linseed	12.5	1.54
Other Oilseeds	4.4	0.89
Total Oilseeds	43.1	8.74
Total Fibres	0.2	0.04
Total Fodder crops	1.0	0.20
Total non-food crops	44.3	8.99
Gross cropped area	492.9	100.00

2.2.9 Irrigated Cropped Area

As mentioned earlier the irrigated area formed only 12.6 per cent of the gross cropped area. Of the irrigated crops wheat claimed 63.77 per cent and paddy 14.65 per cent. The crop group of fruits and vegetables formed 4.35 per cent of gross irrigated area. Pulse crops claimed 15.46 per cent of the gross irrigated area.

Sugarcane was the highest irrigated crop as compared to 31.55 per cent of wheat and 7.26 per cent of paddy. (Table 2.9)

Table 2.9 Cropwise irrigated area, Jabalpur district

(Area - thousand hectares)

Crop	Irrigated area	Percentage to gross irrigated area	Cropped area	Percentage of irrigated area to cropped area
Paddy	9.1	14.65	125.3	7.26
Wheat	39.6	63.77	125.5	31.55
Total Cereals	48.7	78.42	304.4	16.00
Total Pulses	9.6	15.46	133.6	7.18
Total Foodgrains	58.3	93.88	438.0	13.31
Sugarcane	0.1	0.16	0.2	50.00
Total spices	0.3	0.48	0.8	37.50
Total Fruits & Vegetables	2.7	4.35	9.6	28.12
Total Food Crops	61.4	98.87	448.6	13.68
Total non-food crops	0.7	1.13	44.3	15.80
Total	62.1	100.00	492.9	12.60

2.2.10 Size of Holdings

There were 2,67,058 operational holdings covering 5,74,579 hectares. Thus the average size of holdings was 2.15 hectares. Distribution of area was very unequal. Marginal and small farmers with less than 2.00 hectares each constituting 68.2 per cent of the total number of holdings occupied only 24.1 per cent of the total land, whereas, 31.8 per cent of the total number of holdings commanding more than 2 hectares each occupied 75.9 per cent of land. (Table 2.10)

Table 2.10 Number and area of operational holdings, Jabalpur district

(Area- Hectares)

Size group	Number of Operational holdings		Area under Operational holdings	
	Number	Percentage to total	Area (Hectares)	Percentage to total
Upto 1.0 (Marginal)	1,23,888	46.4	54,196	9.4
1.0 to 2.0 (Small)	58,271	21.8	84,246	14.7
2.0 to 4.0 (Semi-medium)	46,625	17.5	1,30,174	22.7
4.0 to 10.0 (Medium)	30,854	11.5	1,85,809	32.3
10.0 & above (Large)	7,420	2.8	1,20,154	20.9
Total	2,67,058	100.0	5,74,579	100.0
Average size of holding (ha.)			2.15	

Source : Agricultural Census 1985-86

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CHAPTER-III

RESULTS AND DISCUSSION

This chapter is devoted to the examination of characteristics of small and marginal farms with regard to ownership, utilisation and productivity of assets. It is also intended to study the profitability on small and marginal farms with respect to cultivation and allied sectors. These will direct us to the identification of viable and unviable farms.

3.1 Farm Structure and Ownership

Out of the selected sample farms 36 per cent were marginal and 42 per cent, small farms. Only 22 per cent were medium farmers. Thus, the predominence of small farms was very clear. However, it may be noted that though marginal and small farmers together accounted for 78 per cent of the total number, the total land of their operation accounted for only 56 per cent. The average size of farm was 0.60 hectare 1.63 hectares and 3.18 hectares for marginal, small and medium farmers respectively.

The total area owned was 160.21 hectares : 79.44 hectares in Jabalpur district and 80.77 hectares in Balaghat district.

It may be seen that the farmers of both the districts were more or less identical in respect of their number, total area of farms and average size of farms.

The selected farmers leased in 12.47 hectares. This leasing in practice was restricted to marginal and small farmers. Thus, the operated area of the selected farms came to 172.68 hectares (Table 3.1).

Table 3.1 Number and area (owned, leased in and operated), sample farms, Jabalpur and Balaghat districts, M.P.

(Area- Hectares)

Category	No.of farms	Area of farms (owned) Total	Area of farms (owned) Average	Land leased in	Total area operated
Jabalpur district					
Marginal	18	11.29 (14.21)	0.63	4.05	15.34
Small	21	35.65 44.88)	1.70	1.62	37.27
Medium	11	32.50 (40.91)	2.95	-	32.50
Total	50	79.44 (100.00)	1.59	5.67	85.11
Balaghat district					
Marginal	18	10.36 (12.83)	0.57	1.20	11.56
Small	21	33.01 (40.87)	1.57	5.60	38.61
Medium	11	37.40 (46.30)	3.40	-	37.40
Total	50	80.77 (100.00)	1.61	6.80	87.57
Total					
Marginal	36	21.65 (13.51)	0.60	5.25	26.90
Small	42	68.66 (42.86)	1.63	7.22	75.88
Medium	22	69.90 (43.63)	3.18	-	69.90
Total	100	160.21 (100.00)	1.60	12.47	172.68

Note : Figures given in parenthesis indicate percentage to total

3.2 Farm Assets

The average value of assets per farm was Rs.44,461.00. Since the sample constituted mainly marginal and small farms land formed highest proportion (93.6 per cent) of the total value of assets. Besides land, transportation equipments namely bullock carts formed 3.1 per cent. This left very little for other worldly possessions like farm house (0.70 per cent), irrigation equipment (0.45 per cent), agricultural equipments (1.46 per cent) and others (0.51 per cent).

This clearly indicated that if marginal and small farmers were to be made viable and less dependent on the small pieces of land they should be provided with some asset in the form of agricultural implements or non agricultural assets which they did not possess.

The total absence of any irrigation equipment showed the non possession of any owned irrigation source. This also showed that there was no kind of owned assured irrigation source on these farms and the farmers depended solely either on the irrigation sources of the neighbours or government.

Although there was no relationship between the proportion of the value of land owned with the size of farms, the value of agricultural and transportation equipments per farm tended to decrease with size of holding. (Table 3.2)

Table 3.2 Farm Assets (dead stock)

(Value - Rs./per farm)

Group	Land (Owned)	Farm House	Irrigation Equipment	Agricultural Equipment	Transportation means	Other	Total
Jabalpur District							
Marginal	6,805.00	-	-	255.00	261.00	-	7,321.00
(%)	(92.95)			(3.48)	(3.56)		(100.00)
Small	20,095.00	-	-	345.00	543.00	-	20,983.00
(%)	(95.78)			(1.64)	(2.58)		(100.00)
Medium	35,182.00	855.00	-	634.00	727.00	-	37,398.00
(%)	(94.08)	(2.28)		(1.70)	(1.94)		(100.00)
Total	18,630.00	235.00	-	376.00	482.00	-	19,723.00
(%)	(94.47)	(1.19)		(1.90)	(2.44)		(100.00)
Balaghat District							
Marginal	22,888.00	172.00	444.00	606.00	1,661.00	22.00	25,793.00
(%)	(88.75)	(0.66)	(1.72)	(2.35)	(6.44)	(0.08)	(100.00)
Small	61,857.00	523.00	-	830.00	2,119.00	-	65,329.00
(%)	(94.69)	(0.80)		(1.27)	(3.24)		(100.00)
Medium	1,38,863.00	681.00	1,090.00	1,595.00	3,545.00	2,272.00	1,48,046.00
(%)	(93.82)	(0.45)	(0.73)	(1.07)	(2.40)	(1.53)	(100.00)
Total	64,770.00	432.00	400.00	918.00	2,268.00	508.00	69,296.00
(%)	(93.48)	(0.62)	(0.58)	(1.32)	(3.27)	(0.73)	(100.00)
Total							
Marginal	14,847.00	86.00	222.00	431.00	961.00	11.00	16,558.00
(%)	(89.68)	(0.52)	(1.34)	(2.60)	(5.80)	(0.06)	(100.00)
Small	40,976.00	262.00	-	587.00	1,331.00	-	43,156.00
(%)	(94.96)	(0.60)		(1.36)	(3.08)		(100.00)
Medium	87,022.00	768.00	545.00	1,115.00	2,136.00	1,136.00	92,722.00
(%)	(93.86)	(0.83)	(0.59)	(1.20)	(2.30)	(1.22)	(100.00)
Total	41,700.00	310.00	200.00	647.00	1,375.00	229.00	44,461.00
(%)	(93.06)	(0.70)	(0.45)	(1.46)	(3.01)	(0.51)	(100.00)

3.3 Livestock

The value of livestock per farm was Rs.4,475. This comprised draught animals (Rs.2,433) and milch animals(Rs.1,962) besides other livestock. The value of draught animals per farm generally increased with the size of holding. Moreover, the value of milch cattle increased substentially with the size of holdings. The reason for this was higher ability of the small and medium farmers to provide feed and fodder either owned or purchased as compared to the marginal farmers.

On the other hand, keeping of poultry birds seemed to be more common with the marginal farmers as compared to others. Keeping of goats was more common among the small farmers. Marginal farmers could afford to keep poultry and other animals due to low cost. The medium farmers generally belonging to upper castes do not keep poultry and other animal due to social taboo.

This directs us to encourage keeping of milch animals among medium farmers as against poultry and other animals by marginal and small farmers. Incidentally this is the reason of failure of dairy units among landless, marginal and small farmers. (Table 3.3)

3.4 Occupational Distribution

It was found that main occupation of 93 per cent farmers was farming and only 7 per cent were dependent on some non-farming occupation. Non farming occupations were more common on marginal farms (20.00 per cent) than small farms (2.50 per cent). None of farmers owning medium size farms had non farming as main occupation. (Table 3.4)

Table 3.3 Farm Assets (Livestock)

(Value- Rs./farm)

Size group	Drought animal	Milch cattle	Poultry birds	Other including (Pigs, goats etc.)	Total
Jabalpur district					
Marginal	1,350	488	46	-	1,879
Small	1,609	766	14	193	2,582
Medium	1,563	873	-	36	2,472
Total	1,506	690	20	89	2,305
Balaghat district					
Marginal	2,361	2,117	3	136	4,617
Small	3,266	2,555	-	197	6,018
Medium	5,173	6,364	-	127	11,664
Total	3,360	3,235	1	49	6,645
Total					
Marginal	1,855	1,302	23	68	3,248
Small	2,437	1,660	7	195	4,300
Medium	3,368	3,618	-	81	7,068
Total	2,433	1,962	10	69	4,475

Table 3.4 Main occupation, selected farmers

Size group	Jabalpur district		Balaghat district		Total	
	Agri-culture	Non-Agri-culture	Agri-culture	Non-Agri-Culture	Agri-culture	Non-Agri-culture
Marginal	16	2	14	4	30	3
Small	20	1	21	-	41	1
Medium	11	-	11	-	22	-
Total	47	3	46	4	93	7

It was observed that dairy and agricultural labour were the major subsidiary occupations. Other subsidiary occupations were non agricultural labour, goat rearing and poultry. (Table 3.5)

Table 3.5 Subsidiary Occupation, selected farmers

Size group	Wage Labour		Dairy	Poultry	Goat rearing	Others
	Agri-culture	Non-Agri-culture				
Jabalpur District						
Marginal	10	10	6	4	-	3
Small	8	8	9	1	3	3
Medium	6	2	-	-	-	3
Total	24	20	21	5	3	9
Balaghat District						
Marginal	3	4	12	1	3	8
Small	8	8	12	-	1	5
Medium	-	-	10	-	1	2
Total	11	12	34	1	5	15
Total						
Marginal	13	14	18	5	3	11
Small	16	16	21	1	4	8
Medium	6	2	16	-	1	5
Total	35	32	55	6	7	24

In Balaghat district dairy was the most common subsidiary occupation as against labour (both agricultural and non-agricultural) in Jabalpur district. It indicated that the farmers of Balaghat district preferred agricultural based occupations rather than non-agricultural based subsidiary occupations.

It was noted that wage labour (both agriculture and non-agriculture) was more predominant subsidiary occupation among marginal and small farmers as compared to medium farmers. Dairy was the subsidiary occupation of all size groups. Poultry, goat rearing and "other" subsidiary occupation were more commonly found on marginal and small category households than the medium size households. Explanation to this phenomenon has been given under the caption "Livestock".

3.5 Human Labour

On the selected farms the labour units available were 409 (180 in Jabalpur district and 229 in Balaghat district). The labour units per farm in both the districts- increased with the size of farm. This was a common phenomenon in the country. In Jabalpur district labour units increased from 3.44 in the marginal size group to 4.09 in the medium size group. In Balaghat district the related increase was from 3.38 to 6.36.

The labour units per hectare, on the otherhand, decreased with the increase in size of farms. The per hectare availability in Jabalpur district decreased from 4.02 to 1.38 and that in Balaghat district from 5.27 to 1.87.

Although, finding out the optimum labour units required per hectare in the given situation was not the objective of the study the figures indicated that the pressure of population was higher

on the marginal farms. This, indirectly pointed out to the surplus labour availability on marginal and small farms and the need for their employment elsewhere. (Table 3.6)

Table 3.6 Human labour units available on selected farm

Size group	Labour units available	Average labour	
		Per farm	Per Hectare
Jabalpur district			
Marginal	62	3.44	4.02
Small	73	3.47	1.95
Medium	45	4.09	1.38
Total	180	3.60	2.11
Balaghat district			
Marginal	61	3.38	5.27
Small	98	4.66	2.53
Medium	70	6.36	1.87
Total	229	4.58	2.61
Total			
Marginal	123	3.41	4.56
Small	171	4.07	2.25
Medium	115	5.22	1.64
Total	409	4.09	2.36

3.6 Employment

The human labour use in agriculture is studied in two ways i) requirement of human labour for crop production including live stock maintenance, and, ii) the kind and volume of employment a farmer is engaged in. This study indicated that the requirement of labour for farm operations and livestock maintenance was 266 days per farm and 65 days per worker.

In Jabalpur district the figures were 223 days per farm and 62 days per worker, whereas, in Balaghat district the days per farm were 309 and per worker, 68. This clearly showed that necessity of higher labour requirement on own farm in Balaghat district was due to higher percentage of irrigation, better management and more intensive cropping. While Balaghat district was largely single crop area (paddy) Jabalpur district had both rabi and kharif crops. This was reflected in the requirement of labour in different seasons. In Jabalpur district the ratio of days required in kharif : rabi was 1 : 2.40. It was 1 : 2 in Balaghat district.

Higher labour requirement in Balaghat district was noted for all the three size groups.

Due to lesser development of agriculture in Jabalpur district the farmers were compelled to take to wage labour in order to add to the family income. Agricultural wage labour days per worker in Jabalpur were 18 as against 13 in Balaghat district. The number of days spent on non-agricultural wage labour depended on two factors i) capacity for absorption in the agricultural sector, and, ii) opportunities in non agricultural sector.

On both these counts i.e. backwardness of agriculture as well as opportunities of non farm employment Jabalpur district was slightly better placed and, therefore, non agricultural wage labour days were higher (134) in Jabalpur as compared to 118 in Balaghat district. Non agricultural labour days per worker were also higher (37) in Jabalpur district than Balaghat district (26). However, in Balaghat district more labour days per farm (96) and per worker (21) were spent in business and profession than Jabalpur district (53 and 15 respectively).

Of the total labour days about half were spent on own farm including those used for livestock maintenance. Further, between 10-13 per cent labour days were spent on agricultural labour. While non agricultural labour contributed slightly higher on the farms of Jabalpur district those spent on business, service and profession were higher in Balaghat district. It is well known that the proportion of labour days spent on own farm would be directly related to the level of development of agricultural sector. If more employment was to be provided in agricultural sector the development of agricultural sector was a must. A farmer would not like to move out of the village if he was provided adequate employment and income opportunities in the village itself, may be on his own farm or in the neighbour's field. A comparison of the two districts pointed out this fact. Higher agricultural development level in Balaghat district not only provided employment on own farm and in the form of wage labour in the same village but also discouraged to adopt non-agricultural wage labour.

Table 3.7 Employment available on selected farms

Farm size	Own Farm and Live stock maintainance			Employed as				Business and Service	Total
				Agricultural wage labour			Non Agri-cultural wage labour		
	Kharif	Rabi	Total	Kharif	Rabi	Total			
JABALPUR DISTRICT									
Marginal Farms									
Per Farm	(86)	(63)	149	(42)	(35)	77	132	66	422
Per Worker	(25)	(18)	43	(12)	(10)	22	39	19	123
Small Farms									
Per Farm	(128)	(90)	218	(32)	(25)	57	147	35	457
Per Worker	(37)	(26)	63	(9)	(7)	16	42	10	181
Medium Farms									
Per Farm	(205)	(149)	354	(31)	(27)	58	113	66	591
Per Worker	(50)	(36)	86	(8)	(6)	14	28	16	144
Total Per Farm	(130)	(93)	223	(35)	(29)	64	134	53	474
Total Per Worker	(36)	(26)	62	(10)	(8)	18	37	15	132
BALAGHAT DISTRICT									
Marginal Farms									
Per Farm	(116)	(46)	162	(48)	(34)	82	167	77	488
Per Worker	(34)	(14)	48	(14)	(10)	24	49	23	144
Small Farm									
Per Farm	(224)	(99)	323	(31)	(15)	46	106	52	527
Per Worker	(48)	(21)	69	(7)	(3)	10	23	11	113
Medium Farms									
Per Farm	(320)	(205)	525	(24)	(17)	41	64	213	843
Per Worker	(50)	(32)	82	(4)	(3)	7	10	33	132
Total Per Farm	(206)	(103)	309	(36)	(22)	58	118	96	582
Total Per Worker	(45)	(23)	68	(8)	(5)	13	26	21	127
T O T A L									
Marginal Farms									
Per Farm	(101)	(55)	156	(45)	(35)	80	150	72	455
Per Worker	(30)	(16)	46	(13)	(10)	23	44	21	133
Small Farms									
Per Farm	(176)	(95)	271	(32)	(20)	52	127	44	492
Per Worker	(43)	(23)	66	(8)	(5)	13	31	11	121
Medium Farm									
Per Farm	(263)	(177)	440	(28)	(22)	50	89	140	717
Per Worker	(50)	(34)	84	(5)	(4)	9	17	27	137
Total Per Farm	(168)	(98)	266	(36)	(26)	62	126	75	529
Per Worker	(41)	(24)	65	(9)	(6)	15	31	18	129

3.7 Employment of Bullock Labour

A pair of bullocks was engaged for a total number of 71 days in a year. It included 52 days on own farm and 19 days as hired out labour. The total number of employed days were one and half times more in Balaghat district (101 days) than Jabalpur district (40 days). The figures with regard to own farm employment and hired out days also presented a similar picture. Thus, own farm employment in Jabalpurddistrict was only 30 days as against 73 days in Balaghat district. The hired out labour days were much less in Jabalpur district (10) as compared to Balaghat district (28 days).

The employment days per pair of bullocks increased with the size of farms and this was obvious as larger the size of farms more was the bullock labour requirement. While in Jabalpur district, the employment days increased from 23 on marginal size group to 42 and 53 in small and medium size groups respectively, in Balaghat district it increased from 47 on marginal size group to 102 and 197 in small and medium size groups respectively. This was true with regard to own farm employment and hired out employment.

The average per hectare employment was 21 days. The per hectare employment was nearly two and half times in Balaghat (29 days) than Jabalpur district (12 days). Within the district, however, there was no difference in per hectare bullock labour employment between different size groups.

It clearly emerged that per hectare requirement of bullock labour did not increase with the size and probably the available bullock labour was sufficient enough looking to the agricultural

operations in the area. However, increasing hired out labour with the size of farmsproved that additional bullock power if added could be utilized for hiring out to other farmers. Probably with this very intention marginal and small farmers have been offered a pair of bullocks through IRD Programme. It was intended that the extra bullock power and the surplus human labour available on marginal and small farms combined together could be offered as hired labour and add to the family income of marginal and small farms.

Table 3.8 Employment of bullock labour (own)

Size group	Own Farm employment (days)	Per hectare* employment on own farm (days)	Hired out (days)	Total employment (days)
JABALPUR DISTRICT				
Marginal	16	13	7	23
Small	31	13	11	42
Medium	40	12	13	53
Total	30	12	10	40
BALAGHAT DISTRICT				
Marginal	29	33	18	47
Small	72	30	30	102
Medium	153	28	44	197
Total	73	29	28	101
T O T A L				
Marginal	24	21	13	37
Small	52	22	20	72
Medium	101	20	28	129
Total	52	21	19	71

* Operated area

3.8 Area Irrigated

On the selected farms the irrigated area was 77.80 hectares. Thus, the percentage of irrigated area was 45.05. However, there was a significant difference between the two districts. While the percentage of irrigated area in Jabalpur district was only 11.16 it was 77.99 in Balaghat district. This was in line with the district level statistics.

As regards sources of irrigation it was observed that in Jabalpur district more than 90 per cent of the irrigated area was commanded by "other sources" which included diesel or electrical pumps fitted on rivers and nallahs. On the other hand, in Balaghat district the major sources of irrigation were canals (81.26 per cent) followed by tanks (13.17 per cent) (Table 3.9).

Thus, the farmers of Balaghat district were better placed in the matter of irrigation.

3.9 Cropping Pattern

The total cropped area on the selected farms was 120.74 hectares. Jabalpur was one of the districts of the paddy-wheat zone. This was reflected on the selected farms also. Paddy contributed 29.83 per cent and wheat, 32.98 per cent. Other important millets were kodo-kutki and constituted 14.64 per cent of the cropped area. Among pulses only lentil (5.80 per cent) and among oilseeds ramtil (5.83 per cent) were important.

It was observed that smaller the farms lesser was the number of crops and less diversification. The marginal farms had larger proportion of cereals and smaller proportion of pulses and oilseeds. This was due to lesser risk bearing capacity and lack of capital.

Table 3.9 Area irrigated, selected farms

Particulars	Total area operated (ha.)	Irrigation				Total	% to total operated area
		Canal	Tanks	Wells/ Tube	Others		
JABALPUR DISTRICT							
Marginal	11.56	6.32 (55.70)	3.5 (34.30)	-	-	9.62 (100.00)	83.22
Small	38.61	22.58 (82.16)	3.3 (12.00)	1.60 (5.84)	-	27.48 (100.00)	71.17
Medium	37.40	26.60 (85.25)	2.40 (7.70)	2.20 (7.05)	-	31.20 (100.00)	83.42
Total	87.57	55.50 (81.26)	9.00 (13.17)	3.80 (5.57)	-	68.30 (100.00)	77.99
BALAGHAT DISTRICT							
Marginal	15.34	-	-	0.81 (100.00)	-	0.81 (100.00)	5.28
Small	37.27	-	-	-	8.29 (100.00)	8.29 (100.00)	22.24
Medium	32.50	-	-	-	0.40 (100.00)	0.40 (100.00)	1.23
Total	85.11	-	-	0.81 (8.52)	8.69 (91.48)	9.50 (100.00)	11.16
T O T A L							
Marginal	26.90	6.32 (60.60)	3.3 (31.64)	0.81 (7.76)	-	10.43 (100.00)	38.7
Small	75.88	22.58 (63.13)	3.3 (9.22)	1.6 (4.47)	8.29 (23.18)	35.77 (100.00)	47.13
Medium	69.90	26.6 (84.18)	2.4 (7.60)	2.2 (6.97)	0.40 (1.25)	31.60 (100.00)	45.2
Total		55.5 (71.34)	9.00 (11.57)	4.61 (5.92)	8.69 (11.17)	77.80 (100.00)	45.05

However, the intensity of cropping was nearly 200 per cent (195.92 per cent) on the marginal farms as compared to 141.43 & 148.30 on the small and medium farms respectively. This was because of the fact that the marginal farmers grew crops in both the seasons knowing well that the productivity would not be high due to lack of resources and capital.

In Balaghat district the number of crops grown was less. Balaghat district was in paddy zone. Therefore, on the selected farms nearly 70 per cent (68.98) area was under paddy. Other crops of importance were linseed occupying 16.10 per cent (this crop was not grown in Jabalpur district) and wheat which occupied 11.94 per cent of the cropped area.

The variation in the proportion of paddy, wheat and linseed showed that while the proportion of paddy and wheat decreased with the increase in the size of holdings that of linseed increased with the size.

The intensity of cropping on the marginal holdings was 149.61. It increased to 153.16 on small size farms and further to 163.10 on the medium size farms. It has been mentioned earlier that Balaghat district had percentage of irrigation of 69.18. This was the main reason for higher intensity of cropping and that too higher on medium size farms because of larger area in rabi season (linseed). (Table 3.10)

3.10 Productivity of various crops

Productivity of crops depended on various factors such as soil texture, fertility, weather conditions rainfall etc. Use of high yielding varieties, fertilizers, irrigation and other factors were associated. The yield rates in Balaghat district were satis-

Table 3.10 Cropping Pattern selected farms

Crops	Jabalpur								Balaghat							
	Size group of farms								Size group of farms							
	Marginal		Small		Medium		Total		Marginal		Small		Medium		Total	
	Area (ha.)	% to total	Area (ha.)	% to total	Area (ha.)	% to total	Area (ha.)	% to total	Area (ha.)	% to total	Area (ha.)	% to total	Area (ha.)	% to total	Area (ha.)	% to total
Cereals																
Paddy	6.80	30.77	15.52	30.78	13.70	28.43	36.02	29.83	11.80	76.13	38.66	76.01	37.40	61.31	87.86	68.98
Maize	1.76	7.95	1.00	1.98	3.00	6.22	5.76	4.77	-	-	-	-	-	-	-	-
Wheat	8.20	37.07	16.00	31.73	15.60	32.37	39.80	32.98	2.20	14.3	6.40	12.59	6.60	10.83	15.20	11.94
Kodo-kutki	1.08	4.88	8.80	17.45	7.80	16.18	17.68	14.64	-	-	-	-	-	-	-	-
Total Cereals	17.84	80.67	41.32	81.94	40.10	83.20	99.26	82.22	14.00	90.43	45.06	88.60	44.00	72.14	103.06	80.92
Pulses																
Urad	0.20	0.90	0.40	0.79	0.90	1.87	1.50	1.24	-	-	-	-	-	-	-	-
Tur	0.40	1.80	-	-	-	-	0.40	0.33	0.06	0.39	-	-	-	-	0.06	0.04
Gram	0.50	2.26	1.20	2.38	0.20	0.41	1.90	1.57	0.10	0.64	1.40	2.75	2.20	3.60	3.70	2.91
Lentil	1.10	4.97	3.10	6.15	2.80	5.81	7.00	5.80	-	-	-	-	-	-	-	-
Total Pulses	2.20	9.93	4.70	9.32	3.90	8.09	10.80	8.94	0.16	1.03	1.40	2.75	2.20	3.60	3.76	2.95
Oilseed																
Ramtil	0.62	2.80	3.40	6.74	3.00	6.22	7.02	5.81	-	-	-	-	-	-	-	-
Til	-	-	0.80	1.58	0.40	0.83	1.20	1.00	0.04	0.25	-	-	-	-	0.04	0.03
Mustard	1.46	6.60	0.20	0.40	0.80	1.66	2.46	2.03	-	-	-	-	-	-	-	-
Linseed	-	-	-	-	-	-	-	-	1.30	8.38	4.40	8.65	14.80	24.26	20.50	16.10
Total Oilseed	2.08	9.40	4.40	8.72	4.20	8.71	10.63	8.84	1.34	8.63	4.40	8.65	14.80	24.26	20.54	16.13
Total Cropped Area	22.12	100.00	50.42	100.00	48.20	100.00	120.74	100.00	15.5	100.00	50.86	100.00	61.00	100.00	127.36	100.00
Intensity of cropping (%)	195.92		141.43		148.30		-		149.61		153.16		163.10		-	

Continued.....

Table 3.10 Continued.....

Crops	TOTAL							
	Size group of farms							
	Marginal		Small		Medium		Total	
	Area (ha.)	% to total	Area (ha.)	% to total	Area (ha.)	% to total	Area (ha.)	% to total
Cereals								
Paddy	18.60	49.45	54.18	53.50	51.10	46.79	123.88	41.93
Maize	1.76	4.67	1.00	0.98	3.00	2.75	5.76	2.32
Wheat	10.40	27.65	22.40	22.12	22.20	20.33	55.00	22.17
Kodo-kutki	1.08	2.87	8.80	8.69	7.80	7.14	17.68	7.13
Total cereals	31.84	84.64	86.38	85.29	84.10	77.01	202.32	81.55
Pulses								
Urad	0.20	0.53	0.40	0.40	0.90	0.82	1.50	0.61
Tur	0.46	1.22	-	-	-	-	0.46	0.18
Gram	0.60	1.60	2.60	2.57	2.40	2.20	5.60	2.25
Lentil	1.10	2.92	3.10	3.06	2.80	2.57	7.00	2.82
Total Pulses	2.36	6.27	6.10	6.03	6.10	5.59	14.56	5.87
Oilseeds								
Ramtil	0.62	1.65	3.40	3.35	3.00	2.75	7.02	2.82
Til	0.04	0.10	0.80	0.79	0.40	0.37	1.24	0.50
Mustard	1.46	3.88	0.20	0.20	0.80	0.73	2.46	0.99
Linseed	1.30	3.45	4.40	4.34	14.80	13.55	20.50	8.27
Total Oilseeds	3.42	9.08	8.80	8.68	19.00	17.40	31.22	12.58
Total cropped area	37.62	100	101.28	100	109.02	100	248.01	100
Intensity of cropping (%)	174	-	147	-	156	-	-	-

factory and in the case of paddy, the average yield was much higher as compared to state average. It was mainly because the farming in the district was market oriented. The yield levels of crops in Jabalpur district were lower as compared to state level in almost all the crops except kodo-kutki. The reasons were mainly slopy, infertile, unirrigated land, use of local varieties and poor management of the resources.

The factors of production remaining the same, the yield per hectare was normally uniform in different size groups. However, such conditions were rare. In Jabalpur district small farms recorded higher yields than other two categories of marginal and medium farms. While marginal farms in the district had several limitations of infrastructure and management the medium farms were no better because of fragmentation, land quality, lack of resources and poor management. In Balaghat district, on the other hand, the yield levels recorded steady increase from marginal farms to small farms and subsequently to medium farms. The reasons for this phenomenon have already been recorded elsewhere in the report.

Table 3.11 Yield levels of crops (Figures-Kg.per hectare)

Crops	JABALPUR DISTRICT				BALAGHAT DISTRICT			
	Marginal	Small	Medium	Total	Marginal	Small	Medium	Total
1. Paddy	812	852	860	825	2441	2573	3101	2732
2. Wheat	782	856	707	782	681	690	1166	769
3. Gram	510	610	553	578	200	678	1022	870
4. Tur	500	-	-	500	6670	-	-	667
5. Linseed	-	-	-	-	263	710	240	342
6. Til	-	38	75	50	250	-	-	250
7. Kodo-kutki	509	554	498	529				
8. Maize	753	800	660	713				
9. Urid	280	286	282	283				
10. Lentil	430	490	409	440				
11. Mustard	325	1000	638	482				

3.11 Costs and Returns From Agriculture

The net income from agriculture on the selected farms was Rs.9,57,391. It was Rs.2,20,634 in Jabalpur district and more than 3 times in Balaghat district. This again proved the higher profitability on the farms of Balaghat district than Jabalpur district. This, in turn, was due to growing of crops like paddy, wheat & gram. The other reason was higher irrigation. The third reason was better management of crops with the use of better inputs and better technology.

The net income per farm was Rs.9,574. It was Rs.4,413 in Jabalpur district and Rs.14,735 in Balaghat district. The income per farm increased from marginal farms to small farms and further to medium farm in both the districts. This is, ofcourse, a universal phenomenon.

The income per hectare was Rs.5,984. It was Rs.2,275 in Jabalpur district and Rs.9,152 in Balaghat district respectively. Normally, income per hectare, with the adoption of nearly uniform technology or in other words- other things remaining the same, decreased with the increase in size of farms and this happened in Jabalpur district, where it was Rs.4,157 on marginal farms, Rs.2,718 on small farms and Rs.2,357 on medium farms. In Balaghat district, however, marginal farmers earned a lower net income per hectare (Rs.6,722) as compared to small farms (Rs.9,559). Medium farms earned a lower income than the small farms. The lower net profit per hectare on the marginal farms was due to significantly lower quantity and quality of inputs and technology.

It is concluded that in the areas where farms operated in a situation with higher inputs and improved technology the marginal farms, to become as potential as small farms must use higher inputs and adopt better technology as those of the small farms. If inputs were a constraint, these should be provided through loans and subsidy. (Table 3.12)

Table 3.12 Costs and return from the agriculture

Categories	Total output (Rs.)	Total input (Rs.)	Total Net income (Rs.)	Net income per farm (Rs.)	Net income per hectate (Rs.)
JABALPUR DISTRICT					
Marginal Farms	69,246	22,104	47,142	2,619	4,157
Small Farms	1,49,662	52,642	97,020	4,620	2,718
Medium Farms	1,04,767	28,295	76,472	6,952	2,357
Total	3,23,675	1,03,041	2,20,634	4,413	2,275
BALAGHAT DISTRICT					
Marginal Farms	1,20,093	50,450	69,643	3,869	6,722
Small Farms	4,87,293	1,75,061	3,12,232	14,868	9,559
Medium Farms	4,92,015	1,37,133	3,54,882	32,262	9,483
Total	10,99,401	3,62,644	7,36,757	14,735	9,152
T O T A L					
Marginal Farms	1,89,339	72,554	1,16,785	3,244	5,407
Small Farms	6,36,955	2,27,703	4,09,252	9,744	5,978
Medium Farms	5,96,782	1,65,428	4,31,354	19,607	6,166
Total	14,23,076	4,65,685	9,57,391	9,574	5,984

3.12 Income from Crops and Other Sources

Agriculture and allied activities like dairy, poultry, goat keeping were the major sources of income contributing more than 75 per cent of the total income. The other sources generated very meagre income particularly on marginal and small farms. However, on medium farms service sector had significant contribution in total income.

In Jabalpur district, the average income on marginal and small farms was Rs.7,415 and Rs.10,570 respectively which was lower than the poverty line (Rs.11,000). Only medium farms were able to earn more than this. It was noted that of the total income, agriculture and allied activities contributed about 95 per cent on marginal and small farms. On marginal farms the major portion of total income was not generated by agriculture (35.32 per cent) but wages earned through agricultural and non agricultural labour either in nearby villages or in Jabalpur city contributed the lion's share. However, it was not so in the case of small farms where wages shared about 36 per cent (35.86 per cent).

In the case of Balaghat district the picture was quite different. The total income of all categories of farms was quite higher than the respective categories of farms of Jabalpur district. The average income of marginal and small farms came to Rs.11,235 and Rs.22,617 respectively. The aggregate income from agriculture and allied activities for marginal and small farms came to Rs.9,435 and Rs.19,251 which was 83.98 and 85.12 per cent of the total income. It was also noted that in Balaghat district the farms were less dependent on wages earned from agriculture and non agricultural labour and were more dependent on assured sources of income like agriculture and subsidiary occupations as compared to their counterparts in Jabalpur district. (Table 3.13)

Table 3.13 Distribution of Income from crop and other sources.

Farm size group (No.of farms)	(A)				(B)			Total (A+B)
	Agriculture and Allied activities			Total	Service profession	Trade & Transport	Other sources	
	Crop cultivation (Net Rs.)	From Live stock/ subsidiary occupation	Wages from Agril./Non Agril.					
JABALPUR DISTRICT								
Marginal farms	2619 (35.32)	1101 (14.85)	3,228 (43.53(	6948 (93.70)	467 (6.30)	-	-	7,415.00 (100.00)
Small farms	4620 (43.72)	1,695 (16.03)	3,790 (35.86)	10105 (95.61)	400 (3.78)	65 (0.61)	-	10,570 (100.00)
Medium farms	6952 (42.05)	2448 (14.80)	3,200 (19.35)	12600 (76.20)	3,818 (23.09)	118 (0.71)	-	16,536 (100.00)
Total	4,413 (41.06)	1,647 (15.32)	3,458 (32.18)	19518 (88.56)	1176 (10.94)	53.00 (0.50)	-	20747.00 (100.00)
BALAGHAT DISTRICT								
Marginal farms	3,869 (34.44)	1,630 (14.51)	3,936 (35.03)	9,435 (83.98)	1,800 (16.02)	-	-	11,235 (100.00)
Small farms	14868 (65.74)	2028 (8.97)	2355 (10.41)	19,251 (85.12)	3328 (14.72)	33 (0.14)	04.75 (0.02)	22617 (100.00)
Medium farms	32262 (64.25)	6382 (12.72)	1,425 (2.84)	40,070 (79.80)	10144 (20.20)	-	-	50,214 (100.00)
Total	14735.00 (59.92)	2843.00 (11.56)	2720.00 (11.06)	20,298.00 (82.54)	4,277.00 (17.40)	14.00 (0.06)	2.00 -	24,591.00
T O T A L								
Marginal farms	3,244 (34.79)	1,366 (14.65)	3,582 (38.41)	8192 (87.85)	1,134 (12.15)	-	-	9325.00 (100.00)
Small farms	9744 (58.72	1,862 (11.22)	3,073 (18.52)	14679 (88.46)	1,864 (11.23)	49 (0.30)	2.38 (0.01)	16594.00 (100.00)
Medium farms	19607 (58.75)	4415 (13.23)	2313 (6.93)	26335 (78.91)	6981 (20.91)	59 (0.18)	-	33,375 (100.00)
	9,574 (54.18)	2,245 (12.70)	3089 (17.48)	14908 (84.35)	2,727 (15.43)	34.00 (0.19)	1.00 (0.02)	17,670

3.13 Viable and Non Viable Farms

For this survey viable farm is defined as one which earns net income of Rs.11,000 and more or, in other words, the viable farm is one who is above poverty line. Income of the farm included income from land and subsidiary occupations like dairy, poultry, goat and pig rearing etc. Of the selected 78 farms 29.49 per cent were viable. If only income from farming was taken into account 19.23 per cent were found viable. However, the percentage of viable farms differed considerably in two selected districts. It was noted that in Jabalpur district only 10.26 per cent among marginal and small farms were viable. If income from cultivation only was considered the percentage of viable farms came to 5.12. In Balaghat district the percentage of viable farms was quite higher (48.72). Even the percentage of viable farms on the criterion of income from farming only was quite higher (33.33). It is concluded that significantly higher percentage of farms of Balaghat district were viable than Jabalpur district both on the criteria of only income from farming only, and 'income from farming and subsidiary occupations'. (Table 3.14)

Table 3.14 Viable and Non-viable farms

Category of farms	Criteria of viability				
	Income from cultivation only	Income from cultivation& subsidiary occupations	Total viable farms	Non-viable farms	Total farms
JABALPUR DISTRICT					
Marginal	-	-	-	18	18
Small	2	2	4	17	21
Total	2 (5.13)	2 (5.13)	4 (10.26)	35	39
BALAGHAT DISTRICT					
Marginal	1	1	2	16	18
Small	12	5	17	4	21
Total	13 (33.33)	6 (15.39)	19 (48.72)	20	39
Total of two districts	15 (19.23)	8 (10.26)	23 (29.49)	55	78

If the selected farmers are to be brought above poverty line three pronged efforts have to be made

1. Increase the income from cultivation
2. Increase the income from subsidiary occupations
3. Provide additional employment and income as labour or artisan

3.14 Measures to make Non viable farms Viable

A) Increase the income from cultivation

In Jabalpur district the land of selected Kundam block was undulating, slopy, stoney, infertile and unirrigated. Therefore, the foremost corrective measure would be the soil and water conservation. This has to be achieved through :

i) Construction of field bunds across the slopes
ii) Contour cultivation
iii) Afforestation of the entire government land on the tops of the hills as well as on slopes
iv) Undertaking farm forestry programme
v) Construction of tanks to collect rain water flowing the slopes
vi) Construction of stop dams on rivers, rivulets and nallahs

In Balaghat district the percentage of irrigated area was 36.52. However, there was scope of increasing irrigation.

i) The efforts of M.P. State Govt. to sink wells on the farms of marginal and small have borne fruits. The programme of million wells scheme (Jeevan Dhara Yojana) should be pursued more vigorously.

ii) Paddy crop was grown as a commercial crop by using high

yielding varieties, high doses of fertilisers and improved technology. On marginal and small farms the levels of inputs and technology were low. This was due to financial constraints. It is suggested that if the marginal and small farms were to use higher and better quality inputs with modern technology as those of medium farms crop loans should be given.

The study indicated that in both the districts marginal and small farmers did not possess bullock carts, pairs of bullocks and irrigation and other equipments in adequate measure. They borrowed these affecting the farm efficiency. Bank loans should be provided to them to acquire these.

While providing pairs of bullocks stocks of feed and fodder to last for atleast two months should be supplied.

B) Increase the income from Subsidiary Occupations

The subsidiary occupations included dairy, poultry and goat rearing. In Balaghat district dairy was the sole subsidiary occupation and was run quite efficiently. In Jabalpur district, however, none of these were properly developed. For a successful dairy unit following points be kept is mind.

i) The present practice of grazing had to stop and stall feeding needed to be adopted.

ii) Value of milch animals per farm increased with the size of holdings. The reason was higher ability of small and medium farmers to provide feed and fodder either owned or purchased than the marginal farms. This directs us to encourage dairy among medium farms. In other words dairy unit should not be encouraged on marginal and small farms.

iii) On marginal and small farms keeping of poultry and goats be encouraged. Keeping local birds is totally different than maintaining a systematic poultry unit. Therefore, poultry units may not be successful on all farms. Poultry keeping needs intensive training and experience. Therefore, financing poultry units enmasse may prove disastrous. Actually these have proved so in many areas. One has to be selective in financing poultry units.

c) Provide additional income from wages

As regards occupational distribution and human labour availability following points emerged.

i) Non-farming occupations were more common on marginal farms than small farms. Medium size farms had no non-farming as main occupation.

ii) Wage labour (both agricultural and non-agricultural) was more predominant occupation among marginal and small farmers, as compared to medium farmers.

iii) The labour units available per hectare decreased with the increase in the size of farms from 4.56 to 1.64 indicating that pressure of population was more on marginal farms. This pointed out to the surplus labour availability on marginal and small farms and the need for their employment elsewhere.

The above points showed that any programme providing non-farm employment and thereby additional income should have marginal farmers as target group because this group has more surplus labour than small and medium size groups.

It is recommended that in all the rural development programmes including IRDP, JRY, TRYSEM and DWCRA beneficiaries should invariably be selected from marginal size group.

If the marginal and small farmers could be provided bullock pairs, bullock carts and irrigation equipments, they would not only become self reliant but also could hire out these to others to earn additional income. It was observed that on marginal and small farms surplus human labour was available. If above mentioned assets could be provided to them they would be getting gainful employment and income.

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CHAPTER IV

SUMMARY AND CONCLUSIONS

4.1.1 Of the total land holdings 58.00 per cent were marginal occupying less than 1 hectare each. Another 18.3 per cent were small holdings having area between 1 to 2 hectares. Although these two size groups together accounted for 76.3 per cent of the total number of holdings these commanded only 28.8 per cent of the total land. The situation in Madhya Pradesh was similar so that 57.1 per cent of the total number of holdings were marginal and small but accounted for only 16.1 per cent of the total area. The medium and large farms, on the other hand, accounted for much higher proportion of area than the proportion of their number.

4.1.2 The main causes of poverty among marginal and small farmers were a) low resource base and lower adoption of modern technology due to lower risk bearing capacity and b) low and negligible production and low marketed surplus. These causes marginalised them politically.

4.1.3 The objectives of this study were:

1. To examine the characteristics of small and marginal farms with special reference to the ownership, utilisation and productivity of resources.
2. To study the profitability on small and marginal farms including cultivation and allied sectors of selected households.
3. To identify the farms which are economically viable/ unviable under different agro-climatic conditions, and,
4. To suggest various measures/strategies that could be used for imparting viability to the non viable farms.

4.1.4 A district each in two agro-climatic regions was selected. From Chhattisgarh Plains Region Balaghat district was selected and from Kymore Plateau and Satpura Hills Region Jabalpur district was selected on the basis of maximum number of marginal and small farms. A block each was selected in the selected districts. From each block five villages were selected randomly. From each village 10 households were selected randomly. Thus in all 100 sample farms were selected.

4.2.1 Balaghat district is situated between $21^{o}19'$ and $22^{o}24'$ north latitudes and $79^{o}39'$ and $81^{o}03'$ east longitudes. The district is spread over 922.3 thousand hectares. Nearly 90 per cent of the total population of 11,47,812 was rural. The proportion of schedules castes population was about half (7.17) that of the state (14.10). The literacy percentage was 22.89 as against 29.87 for the state. The average rainfall was 1274 mm. occuring in 66 rainy days.

4.2.2 Forests covered 45.45 per cent of the geographical area and net sown area, 29.85 per cent. The district had a significantly higher percentage of irrigated area (36.52) than that of the state (12.9). Chief sources of irrigation were canals (62.31 per cent) and tanks (36.44 per cent).

4.2.3 Paddy contributed nearly 65 per cent to cropped area and wheat, 6.35 per cent. Linseed contributed 7.24 per cent. Of the irrigated area paddy occupied 89.67 per cent and wheat, 5.92 per per cent. The important irrigated crops were sugarcane, spices, fruits and vegetables, paddy and wheat. The average size of holding was 1.60 hectares. The distribution of area according to size groups was very unequal.

4.2.4 Jabalpur district lies between 22°49' and 24°08' north latitudes and 78°21' and 80°58' east longitudes. The area of the district is 10,122 sq.km. Nearly 55 per cent of the total population of 21,98,743 was rural. The percentages of scheduled castes (12.20) and scheduled tribes (17.44) population were lower than those of the state (14.1 and 22.97). The literacy percentage (41.00) was higher than the state average (29.87). The average rainfall was 1,274 m.m. occuring in 60 rainy days.

4.2.5 The net area sown formed 41.92 per cent and forest, 15.64 per cent. Irrigated area was 12.6 per cent of the cropped area and the major sources were wells (46.06 per cent), canals (15.94 per cent) and tubewells (14.49 per cent).

4.2.6 Paddy accounted for 25.42 per cent and wheat, 25.46 per cent of the cropped area respectively. Gram was another important crop (14.87 per cent). Of the irrigated crops wheat claimed 63.77 per cent of the area and paddy, 14.65 per cent. Other irrigated crops were fruits and vegeta les sugarcane and pulses. The average size of holding was 2.15 hectares. Distribution of area in different size groups was quite skewed.

4.3.1 Out of the selected farms 36 per cent were marginal farms, 42 per cent small farms and 22 per cent medium farms. The average size was 0.60 hectare, 1.63 hectares and 3.18 hectares for three categories respectively. The total area owned was 79.44 hectares in Jabalpur district and 80.77 hectares in Balaghat district. The selected farmers leased in 12.47 hectares, bringing the total operated area to 172.68 hectares.

4.3.2 The average value of assets per farm was Rs.44,461. Land was the single important asset contributing as high as 93.6 per

cent. Bullock carts formed 3.1 per cent. This clearly indicated that the farms lacked in assets like pair of bullocks, irrigation and other equipments, etc. Absence of pair of bullocks and implements showed dependence on others for draught power and field operations. The absence of irrigation equipments again, showed dependence on others or absence of assured irrigation source.

4.3.3 The value of draught and milch animals per farm increased with the size of holdings. The reason for this was higher ability of the small and medium farmers to provide feed and fodder either owned or purchased as compared to marginal farmers. Keeping of poultry and other animals was more common on marginal farms due to lower cost. Keeping of goats was more common on small farms. On the other hand medium farms did not keep poultry and other animals due to social taboo.

This directs us to encourage dairy among medium farms and poultry and other animals on marginal and small farms. Incidentally this was the reason of failure of dairy units among landless and on marginal and small farms.

4.3.4 Main occupation of 93 per cent farmers was farming. Non farming occupations were more common on marginal farms than small farmers. More of the medium size farmers had non farming as main occupation. While labour (both agricultural and non agricultural) was most common subsidiary occupation in Jabalpur district dairy was so in Balaghat district.

Further, labour was more common subsidiary occupation among marginal and small farms than medium farms. On the other hand dairy was subsidiary occupation of all size groups.

4.3.5 The labour units available per farm increased from 3.41 on marginal farms to 4.07 on small farms and further to 5.22 on medium farms. The labour units per hectare, on the other hand, decreased with the increase in the size of farms from 4.56 to 1.64. This indicated that the pressure of population was more on marginal farms. This pointed out to the surplus labour availability on marginal and small farms and need for their employment elsewhere.

4.3.6 Requirement of labour for farm production and livestock maintenance was 266 days per farm and 65 days per worker. The labour requirement in Balaghat district was higher (309 and 68 days) than Jabalpur district (223 and 62 days). This was due to higher percentage of irrigation, better management and more intensive cropping.

Due to lesser development of agriculture the farmers of Jabalpur district were compelled to take to agricultural as well as non-agricultural labour. In Balaghat district more labour days were spent in business and profession than Jabalpur district.

Therefore, it can be noted that if more employment was to be provided in agricultural sector the development of agriculture was a must. Higher agricultural development level in Balaghat district not only provided higher employment on farms but also discouraged to adopt non-agricultural wage labour.

4.3.7 A pair of bullocks was engaged for a total number of 71 days in a year. The number of employed days was one and half times more in Balaghat district (101 days) than Jabalpur district (40 days). The employment days per pair of bullocks increased

with the size of farms. Per hectare employment days required on own farm, were 29 in Balaghat district and 12 in Jabalpur district. Within the selected districts, however, there was no difference in per hectare bullock labour requirement between different size groups. The available bullock labour was sufficient enough for the agricultural operations. Increasing hired out labour with the size of farm showed that additional bullock power, if added, could be utilised for hiring out to others. It is recommended that marginal and small farmers should be financed to purchase pairs of bullocks so that extra bullock power and surplus human labour could be combined together and offered as hired labour to add to the family income.

4.3.8 The percentage of irrigated area in Jabalpur district was only 11.16. It was 77.99 in Balaghat district. In Jabalpur district more than 90 per cent of the irrigated area was commanded by "other sources" which included diesel or electrical pumps fitted on rivers and nallahs. In Balaghat district, on the other hand, the major sources were canals (81.26 per cent) followed by tanks (13.17 per cent).

4.3.9 In Jabalpur district paddy contributed 29.83 per cent to the cropped area and wheat, 32.98 per cent. Kodo-kutki contributed 14.64 per cent. Other crops included lentil (5.80 per cent) and ramtil (5.83 per cent). In Balaghat district 68.98 per cent of the cropped area was under paddy. Other important crops were linseed (16.10 per cent) and wheat (11.94 per cent). In Jabalpur district the intensity of cropping on marginal farms was 195.92 per cent. It was lower on small and medium farms (141.43 and 148.30 per cent respectively). In Balaghat district the intensity

of cropping on marginal farms was 149.61. It increased to 153.16 on small farms and further to 163.10 on medium farms. The higher intensity of cropping in Balaghat district was due to higher percentage of irrigated area and growing of linseed crop in rabi season on large scale.

4.3.10 The yield per hectare of paddy in Balaghat district was 2732 kg.per hectare which was higher than the state average. The yield levels of crops in Jabalpur district were lower than state average in most of the crops except kodo-kutki. The reasons were: slopy,infertile,unirrigated land, use of local varieties and poor management. In Jabalpur district small farms recorded higher yields than marginal and medium farms. In Balaghat district the yield levels recorded steady increase from marginal farms to small farms and to medium farms. The reasons for higher yields were : fertile soil, use of high yielding varieties and use of better inputs.

4.3.11 The net income per farm from agriculture in Jabalpur district was Rs.4,413. It was more than 3 times (Rs.14,735) in Balaghat district. The income per farm increased from marginal farms to small farms and further to medium farms in both the districts. The income per hectare was Rs.2,275 in Jabalpur district and Rs.9,152 in Balaghat district. In Jabalpur the income per hectare decreased with the increase in size of farms. In Balaghat district marginal farms earned a lower net income per hectare than small farms. This was due to significantly lower quantity and quality of inputs and technology. Thus the areas where farms operated in a situation with higher inputs and improved technology, the marginal farms, to become competitive

with small farms must use higher inputs and better technology as those of small and medium farms. If inputs were costly these should be provided through loans.

4.3.12 Agriculture and subsidiary occupations like dairy, poultry and goat keeping contributed more than 75 per cent of the total income. In Jabalpur district the income on marginal and small farms was below poverty line. On marginal farms major portion came from agricultural and non agricultural labour. In Balaghat district income of all categories was more than Jabalpur district. The dependence on wages was less.

4.3.13 Farms earning income more than Rs.11,000 were termed viable. Of the selected 78 farms 29.49 per cent were viable. If only income from farming was taken into account 19.23 per cent were found viable. In Jabalpur district 10.26 per cent farms were viable. In Balaghat district the percentage of viable farms was quite higher (48.72).

4.3.14 If the farmers are to brought above poverty line following kinds of measures should be adopted.

A. Increase the income from cultivation - In Jabalpur district soil and water conservation measures like construction of bunds, contour cultivation, afforestation, farm forestry, construction of tanks and stop dams should be undertaken.

In Balaghat district irrigation potential should be exploited by measures like million wells scheme. Financial help should be offered to marginal and small farmers to adopt quality inputs and modern technology. They should be provided pair of bullocks, bullock carts and farm implements.

B. Increase the income from subsidiary occupations - For a successful dairy unit present practice grazing be discouraged. Dairy units on medium farms only be encouraged. These should not be encouraged on marginal and small farms. On marginal and small farms poultry and goat rearing be encouraged. However selective approach should be adopted.

C. Increase income from wages - There was surplus labour available on marginal and small farms. Therefore in all the employment programmes only individuals belonging marginal and small categories be recruited.

The employment potential of these classes can be increased if these were provided pairs of bullocks, bullock carts and irrigation and other equipments.

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