

EVALUATION STUDY SERIES NO. 4

**EVALUATION STUDY OF LAND DEVELOPMENT  
UNDER NAGARJUNA SAGAR PROJECT  
MIRYALGUDA TALUKA  
ANDHRA PRADESH**

**AGRICULTURAL REFINANCE AND DEVELOPMENT  
CORPORATION  
•  
B O M B A Y**

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## PREFACE

The starting point for undertaking the evaluation of projects assisted by Agricultural Refinance and Development Corporation (ARDC) is the implicit need to establish a system of evaluating on a continuing basis their financial and economic benefits. With this end in view, the Evaluation Cell was set up in ARDC in January 1974. The evaluation studies undertaken by ARDC have before it the objective of assessing the economic benefits accruing from investments refinanced so as to compare *ex-ante* expectations with *ex-post* achievements, particularly at the farmers' level. To begin with, the specific objectives of evaluation studies undertaken are to: (a) assess the benefits from the schemes at the farmers' level in terms of an increase in output and incremental income, (b) quantify actual costs and benefits realised by the farmers and compare them with optimal levels, (c) compare the actual with the anticipated project benefits and analyse the divergence between the two, if the divergence is significant, (d) estimate aggregate project benefits in terms of additional output, increase in on-farm employment and national income and (e) assess benefits to small farmers.

With the above objectives in view, ARDC took up during the first phase programme of work, 4 projects for evaluation studies. Since a substantial part of ARDC assistance has gone to minor irrigation and land development projects, it was decided to cover two schemes relating to minor irrigation and two relating to land development. Thus, the following 4 schemes one each in Maharashtra, Haryana, Karnataka and Andhra Pradesh were chosen for evaluation studies:

- (1) Minor irrigation scheme for construction of new wells, repairs to old wells and installation of pumpsets thereon in four talukas of Sholapur district (1969-73)—Maharashtra;
- (2) Installation of shallow tubewells under Karnal-I scheme (1967-72) — Haryana;

- (3) Bhadra land development project — Scheme for reclamation and development of land (1966-72) — Karnataka; and
- (4) Nagarjuna Sagar land development project — First credit scheme (1964-69) — Andhra Pradesh.

The evaluation of agricultural projects is being undertaken for the first time and for evolving appropriate techniques in sampling and evaluation methodology, there were no previous studies to look into for guidance. The studies taken up during the first phase programme may, therefore, have to be viewed as pilot studies undertaken with a view to evolving suitable techniques of evaluation. The techniques will have to be suitably modified on the basis of experience gained during the first round of studies and made to suit peculiar features of different projects financed by ARDC. It is hoped that these studies will be found useful and provide a broad framework in evolving a methodology for evaluating benefits from agricultural development schemes.

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9 June 1977

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## IMPORTANT SURVEY DATA

	Borrower Beneficiaries under the Scheme			Assumptions made in the economics of the scheme worked out after full development
	Unit	All cultivators	Small cultivators	
1. Total area developed under the scheme	Acres	7.55	3.61	6.00
2. Cropping intensity	Per cent	185	155	200
3. Yield rates				
i) Paddy	Qtls per acre	12.40	12.90	12.00
ii) Groundnut	„	5.70	2.80	5.00
4. Value of gross produce	Rs per acre of net cropped area	1892	1346	1000
5. Cost of cultivation	„	999	608	500
6. Net farm income	„	893	738	500
7. Incremental income	„	769	646	
8. Total investment	Rs per cultivator	3,435	899	
9. Amount disbursed by PLMB for development of land	„	2,915	1,204	
10. Net present worth	„	56,908	23,120	
11. Benefit cost ratio	„	1.78	2.65	
12. Internal rate of return	Per cent	More than 50	More than 50	
13. Repayment capacity	Rs per cultivator	4,806	1,632	
14. Instalment due to PLMB	„	365	152	
15. Amount repaid of which :	„	589	349	
i) Towards PLMB loan	„	341	145	
ii) Others	„	248	204	

## SUMMARY AND CONCLUSIONS

The ARDC sanctioned in December 1964 the scheme submitted by the Andhra Pradesh State Co-operative Land Mortgage Bank (CLMB) envisaging long-term finance to cultivators in four talukas of Guntur district viz. Guntur, Narasaraopet, Palnad and Sattenapalle on the right bank and one taluka viz. Miryalguda of Nalgonda district on the left bank. The area to be developed under the scheme was 2.90 lakh acres at an estimated cost of Rs. 8.32 crores. The scheme was, however, rephased in 1967. The area to be developed and the cost were scaled down to 1.87 lakh acres and Rs. 6.21 crores, respectively@.

(ii) The evaluation study was confined to Miryalguda taluka of Nalgonda district on the left bank. The area localised for irrigation in Miryalguda was 0.87 lakh acres of which 0.45 lakh acres was targetted to be developed at an estimated cost of Rs. 1.50 crores. The area actually developed under the scheme was 0.41 lakh acres and the amount disbursed by the Primary Land Mortgage Bank (PLMB) at Miryalguda was Rs. 1.46 crores.

(iii) Out of 5,824 borrower beneficiaries under the scheme spread over 74 villages in Miryalguda taluka, a sample of 76 was drawn from 8 selected villages for the study. In order to obtain the pre-development position of borrower beneficiaries, a "control" sample of 30 cultivators with only rainfed area was drawn. In addition, a sample of 30 non-borrower beneficiaries who had undertaken similar investment during 1964-69 without resorting to PLMB loan was drawn for comparative analysis. The cultivators in each of the above three categories were classified into "small" and "others" before drawing the sample. The number of cultivators so selected for our study was as follows:

Type of cultivators	Borrower beneficiaries	Non-borrower beneficiaries	Rainfed area cultivators	Total
Small	40	15	15	70
Others	36	15	15	66
Total	76	30	30	136

@ In the rephased scheme, an additional taluka viz. Vinukonda of Guntur district was included.

(iv) The main findings of the study are :

### **Scheme Implementation**

1. The time taken on an average by the PLMB in processing the loan applications and other procedures before disbursing the first loan instalment ranged from 2 to 4½ months.
2. The actual cost of development of land of the average borrower beneficiary turned out to be higher at Rs. 418 per acre@ than Rs. 305 per acre envisaged in the scheme. The cost escalation was mainly on account of increase in wages paid and higher cost of initial manuring. The difference in cost was met by the cultivator himself.
3. The initial insistence on the use of bulldozers for levelling and the later emphasis on the use of manual and animal labour delayed development of land. Only 12 per cent of borrower beneficiaries accounting for nearly one-tenth of the area developed resorted to the use of bulldozers for land levelling. Thus, a major chunk of the land development was done by manual and bullock power. Not much technical assistance was available from the CLMB to cultivators for land shaping.
4. The handicap in the approach was that there was no agency like the Command Area Development Department (CADD) which could attend to planning, technical guidance and, if necessary, undertaking execution of work on behalf of the farmer.

### **Economics of the Scheme**

5. The economics of the scheme was worked out on the basis of a representative holding of 6.00 acres. The study revealed that the area developed by the average borrower beneficiary was 7.55 acres; the small borrower beneficiary developed on an average 3.61 acres.
6. The cropping pattern assumed in the economics of the scheme was based on the recommendations of the Department

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@ Excludes Rs 37 per acre — cost of constructing water/waste water channels — which was not provided for in the scales of finance under the scheme.



of Agriculture of the State Government. In the entire scheme area in Miryalguda taluka, barring tail-end areas, two crops of paddy were grown.

7. The cropping intensity was assumed to increase to 200 per cent after the land was fully developed. The cropping intensity achieved by the average borrower beneficiary was 185 per cent and that of the average small borrower beneficiary was 155 per cent.

8. The yield rate per acre of paddy grown was around 12½ quintals as against the optimum yield of 12 quintals after full development assumed under the economics of the scheme. The small borrower beneficiary achieved a slightly higher yield rate of 13 quintals of paddy per acre.

9. The value of gross produce per acre of net cropped area of the borrower beneficiary worked out to Rs. 1,892 as against Rs. 1,000 anticipated in the economics of the scheme. Higher benefit than anticipated was on account of the price advantage and slightly better yields of paddy grown in kharif and rabi seasons. The gross produce of the average small borrower beneficiary was relatively lower at Rs. 1,346 on account of lower intensity of cropping since in the tail-end areas, predominantly a small farmer tract, the cultivators were unable to grow two crops in a year.

10. The cost of cultivation per acre of net cropped area incurred by the borrower beneficiary worked out to Rs. 999 as against Rs. 500 assumed in the economics of the scheme. The cost of cultivation per acre of net cropped area in the case of the average small borrower beneficiary was Rs. 608. The higher cost of cultivation can be attributed to increase in wage rates, prices of fertilisers and other inputs.

11. The benefit accruing to the average borrower beneficiary by way of net incremental income per acre of net cropped area worked out to Rs. 769 and in the case of average small borrower beneficiary to Rs. 646. Estimates of net incremental income were not worked out in the economics of the scheme.

12. The internal rate of return worked out to more than 50 per cent in the case of both average borrower beneficiary and small borrower beneficiary. Internal rate of return was not estimated in the economics of the scheme.

13. The incremental income generated by the new investment was found to be more than adequate to service the investment loan raised by borrower beneficiaries.

### **Employment**

14. An estimated 30 lakh man days of employment was created during land development work and 44 lakh man days per year from intensive on-farm activities under irrigated conditions. During the busy season, an acute shortage of labour was reported by cultivators in the scheme area and migration of labourers from non-project areas of the taluka took place to take advantage of additional jobs created because of intensive irrigated cultivation.

### **Agricultural Production**

15. As a result of canal irrigation, acreage under paddy accounted for 92 per cent of the area developed under the scheme and the increase in production of rice@ is estimated at 62 thousand tonnes in 1973-74. Area under groundnut also increased by 4 per cent and production by an estimated 2 thousand tonnes. Acreage under and production of food crops grown before development (bajra and jowar), small millets (korra and variga), pulses (redgram and horsegram) and castor, however, declined.

### **Dairy Development**

16. The importance of receipts from sale of milk and milk products in total cash receipts other than from cultivation indicate that there is scope for dairy development in the scheme area. However, some areas should be earmarked for growing quality grass for grazing of dairy cattle.

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@ Paddy converted into rice at the ratio of 3 : 2.

### **Industries**

17. Future development of industries in the area will have to be, at least initially, in the direction of agro-based industries.

### **Liabilities and Assets Position of Cultivators**

16. As on 30 June 1974, the outstanding debt of the average borrower beneficiary was less than 4 per cent of the total value of his assets; in the case of average small borrower beneficiary the corresponding percentage was eight. Only 21 per cent of the borrower beneficiaries reported borrowings during 1973-74 and 54 per cent of the total borrowings was for current expenditure on farm. Borrowings of the average small borrower beneficiary for current expenditure on farm formed only 9 per cent of the total borrowings.

19. Reflecting to some extent the improvement in the assets position of borrower beneficiaries during the post-development period, about 4 per cent of the total value of assets as on 30 June 1974 was acquired after development.

### **Cultivators' Links with Institutional Agencies**

20. Only 7 per cent of the borrower beneficiaries reported borrowings from co-operatives during the year and the amount of short-term loan per borrower beneficiary was Rs. 128 constituting only 35 per cent of the total borrowings during 1973-74.

21. The taluka co-operative marketing society did not deal in marketing the produce of its members but confined itself only to the distribution of fertilisers and essential consumer goods.

22. Extension service arrangements seem to be adequate with a village level workers' headquarter for a cluster of 4 or 5 villages in the scheme area.

### **Water Management**

23. Because of the field to field system of irrigation prevalent in the area, there is need for field drains and since not much attention has been paid to this aspect, about 15 per cent of the

command area had been rendered unfit for cultivation due to waterlogging and salinity conditions.

24. Excessive use of water for cultivation of two crops of paddy in the upper reaches has resulted in nearly one-tenth of the command area located at the tail-end of the main distributories of the canal not getting sufficient water for cultivation of even one crop of irrigated paddy.

25. The cultivator is not paying for the water from the canal he uses for cultivation at the market rate as he pays only about 5 per cent of the value of gross produce per acre as water rates. While revising the water rates, an attempt may be made to ensure the recovery in full the operational and maintenance expenses of the project and, if possible, a part of its capital outlay.

## CHAPTER I

### SALIENT FEATURES OF THE NAGARJUNA

#### SAGAR PROJECT (NSP) — FIRST CREDIT SCHEME

The Nagarjuna Sagar barrage across the river Krishna near Nandikonda, 135 kms. south of Hyderabad, is a major multipurpose irrigation project having the longest masonry dam and the largest artificial storage reservoir in India. Two main canals, the Right Bank Canal (Jawaharlal Nehru Canal) and the Left Bank Canal (Lal Bahadur Shastri Canal) take off from the head sluice located in a saddle situated on the foreshore of the reservoir. The project envisaged to create an irrigation potential of 30 lakh acres and generate electricity to the extent of 750,000 k.w. of power.

1.2 Under the first phase of the project it was planned to provide irrigation to 20.50 lakh acres, comprising 11.70 lakh acres on the right bank and 8.80 lakh acres on the left bank of the river. Although canal water for irrigation was originally scheduled to be released in June 1966, water was actually released only in August 1976 to irrigate about 6.50 lakh acres.

1.3 In order to facilitate proper utilisation of the irrigation potential to be created under the NSP, the Government of Andhra Pradesh had requested the Reserve Bank of India in 1962 to undertake a study of the credit requirements of cultivators to be benefited by the project for development of their lands and to suggest ways to meet their requirements. Accordingly, the Agricultural Credit Department (ACD) of the Reserve Bank conducted a study in 1962 and assessed the credit needs of the cultivators for reclamation and development of lands, purchase of bullocks and seasonal agricultural operations.

#### First Credit Scheme under NSP

1.4 Based on the recommendations made by the Reserve Bank study assessing the credit needs of the cultivators, the CLMB

submitted in November 1963 the First Credit Scheme under the NSP to the ARDC. The scheme envisaged financing the development of 2.90 lakh acres out of 5.80 lakh acres (which was to receive canal water for irrigation from the NSP) on the presumption that 50 per cent of the cultivators of the area would be credit-worthy or require financial assistance from the PLMBs. The outlay was placed at Rs. 8.32 crores and the scheme was to be completed over a period of three years commencing from December 1964. However, there was delay in implementation of the scheme due to late release of water from the canal in August 1967 instead of June 1966 as originally planned. The demand for loans for land development from cultivators had, therefore, slackened. The scheme was, therefore, rephased in 1967, at the request of the CLMB, for development of 1.87 lakh acres with an outlay of Rs 6.21 crores. An additional taluka i.e. Vinukonda in the Guntur District was covered in the rephased programme. The rephased scheme was to be completed by December 1969. The details of the rephased scheme are shown below :

(Acres in lakhs)			
District	Taluka	Area localised for irrigation	Area to be developed under the scheme
1. Guntur	i) Guntur	0.48	0.14
	ii) Sattenapalle	1.90	0.47
	iii) Narasaraopet	1.50	0.40
	iv) Palnad	1.35	0.36
	v) Vinukonda	0.19	0.05
2. Nalgonda	Miryalguda	0.87	0.45
<b>Total</b>		<b>6.29</b>	<b>1.87</b>

1.5 Term loans were provided to cultivators under the scheme for: (i) reclamation of land by removal of shrubs, boulders, levelling and construction of bunds, (ii) purchase of bullocks to carry out the work of land levelling, and (iii) toning up the soil by green manuring.

1.6 As the earthwork involved in land levelling depends on the slope of land, the ARDC determined, on the basis of technical studies, the per acre cost of development with reference to each slope group. However, these scales of finance were revised on the basis of the experience in the implementation of the scheme, having regard to the type of bunds required, the need for masonry drop structure, etc. The scales of finance for land levelling including initial manuring to tone up the soil were as follows:

Nature of land	Percentage of slope	Rate per acre (Rs)	
		Before rephasing	After rephasing
Wet	1	330	270
	2	470	340
Irrigated dry	--	200	250

Besides, loans were advanced for purchase of bullocks to help in land development subject to a maximum of Rs 1000 per pair to cultivators owning wet land between 3 acres and 10 acres.

### Agro-economic Features of Miryalguda Taluka

1.7 Miryalguda taluka has poor soils and insufficient and irregular rainfall at around 75 cms. a year. Before irrigation water was available, the area was prone to frequent droughts. A prosperous farm belt covering 74 out of the 158 villages has been developed where irrigation facilities under the NSP are available. Vast areas without irrigation facilities, however, continue to be backward.

1.8 The taluka may be divided into three broad physiographic units: (i) the low area of the south not exceeding 300 feet above sea level bordering the rivers Krishna and Musi, (ii) the hilly areas above 500 feet which are situated mainly in the south-west and north of the taluka and (iii) gentle slopes of the central part which are between 300 and 500 feet. The degree of slopes varies from 1 per cent to 20 per cent although the central

part possesses comparatively less slope which varies between 1 per cent and 3 per cent.

1.9 Nearly 75 per cent of the cultivable area is covered by red soils and 25 per cent by black soils. The existence of large deposits of Cuddapah and Kurnool rocks is a geological feature of the taluka. The black soils are distributed in the form of small patches of mostly clay loams to clays, whereas red soils are mostly sandy loams.

1.10 The two sources of irrigation in the taluka are the NSP and to a much lesser extent the Musi Project. Under NSP, 74 out of the 158 villages in the taluka are included under the *ayacut* of the project and eight villages in the north of the taluka are benefited by the Musi Project. In villages not served by the canals there are 76 tanks or ponds and about 4500 irrigation wells providing water for cultivation.

1.11 The major food crops grown in the taluka are paddy, jowar, bajra, korra (kodo millet) and green gram, while castor and groundnut form the cash crops. After the release of water from the NSP, vast acreage has come under paddy during kharif and rabi seasons. Due to the use of high-yielding variety seeds, fertilisers and pesticides, production of paddy has shown a remarkable improvement. However, the acreage under the production of oilseeds declined in the post-development period.



## CHAPTER 2

### METHODOLOGY AND SELECTION OF SAMPLE FOR THE STUDY

The study is confined to the land development scheme in Miryalguda taluka of Nalgonda district on the left canal of the Nagarjuna Sagar dam. Out of the 158 villages in Miryalguda taluka, 74 villages were covered under the command area of the left canal. The total number of borrower beneficiaries in the taluka was 5824 i.e. about 57 per cent of the total number of cultivators in the command area, who developed their land; the area covered was 44,000 acres or 51 per cent of the total area developed during the period of the scheme. The period of the scheme was November 1964 to December 1969 but the time was extended upto the end of July 1970.

#### Sampling Design

2.2 A two stage random sampling design was adopted for the selection of cultivators, the villages being the first stage units and the cultivators as the second stage units.

#### Selection of Villages

2.3 The villages covered under the scheme in the Miryalguda taluka together with the number of borrower beneficiaries in each of the villages were classified into three categories according to the number of borrower beneficiaries in each village and a sample of 8 villages was drawn at random as under: \*

Category	Number of villages	Number of villages selected
1. Villages with borrower beneficiaries less than or equal to 50	29	3
2. Villages with borrower beneficiaries above 50 but upto 100	23	2
3. Villages with borrower beneficiaries above 100	22	3
Total:	74	8

## Selection of Cultivators

2.4 The cultivators in each of the 8 selected villages were listed and were classified into borrower beneficiaries, non-borrower beneficiaries and rainfed area cultivators.

2.5 As the period between pre-development and the reference year (1973-74) was quite long, it was felt that it would not be possible to collect data on pre-investment position from the selected borrower beneficiaries with fair accuracy owing to memory lapse. The group of rainfed area cultivators was, therefore, selected as control sample to reflect the position of borrower beneficiaries before investment.

2.6 The non-borrower beneficiaries were selected for comparison of benefits accrued to this class of cultivators vis-a-vis the benefits of selected borrower beneficiaries.

2.7 The cultivators thus listed were further classified into "small" and "others". From each of the selected villages a sample of 18 cultivators was drawn by selecting 5 borrower beneficiaries, 2 non-borrower beneficiaries and 2 rainfed area cultivators at random from each of the class of "small" and "others". In some of the selected villages the required number of borrower beneficiaries belonging to a particular class could not be obtained. Further, the number of rainfed area cultivators was too small in the selected villages and, hence, to make up the required number, some were selected from the neighbouring villages. The actual number of cultivators selected for the study was as follows:

Category of cultivators	Small	Others	Total
1. Borrower beneficiaries	40	36	76
2. Non-borrower beneficiaries	15	15	30
3. Rainfed area cultivators	15	15	30
Total	70	66	136

2.8. For the purpose of the study, following definitions have been adopted:

- i) A *borrower beneficiary* is a cultivator who has borrowed from the PLMB for land development under the scheme.
- ii) A *non-borrower beneficiary* is a cultivator who had not borrowed from the PLMB for land development under the scheme but had developed his land on his own or through borrowings from some other sources during the scheme period.
- iii) A *rainfed area cultivator* is a cultivator who did not develop his land and raised only rainfed crops in the reference year i. e. 1973-74.
- iv) A *small farmer* among the borrower beneficiaries is defined as one whose annual net farm income in the post-development period did not exceed Rs 2,400\*. Using the estimates of income per acre from irrigated and unirrigated lands, this income limit was translated into acreage limits both for borrower beneficiaries and cultivators of rainfed land (control sample). The estimate of income per acre in the case of cultivators of rainfed land was Rs 100 and in the case of those of irrigated land Rs 500.
- v) *Reference year* of the study means the year from 1 July 1973 to 30 June 1974.
- vi) *Period of the scheme taken up for study* means the period from November 1964 to December 1969.

### Collection of Data

2.9 A general schedule of enquiry comprising four parts was canvassed to the selected cultivators. Information relating to size

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This definition was based on the norms adopted by ARDC prior to the revision of the definition under the present IDA Agricultural Credit Projects.

of holding, changes in assets and loan transactions during the reference year of the study, capital and current on-farm expenditure incurred, etc. was covered in Part I. Details relating to cost of land reclamation and development, details regarding the loan operations of borrower beneficiaries and problems relating to implementation of land reclamation were collected in Part II. In Part III, details of crops grown and the area under each crop, value of gross produce and its sale, cost of cultivation and cash receipts through non-farm business, etc. were collected. Miscellaneous information on adoption of improved farm practices, future plans of development on existing holdings and of undertaking new ancillary activities in farm business in 1974-75, etc. were covered in Part IV.

### Estimation Procedure

2.10 Let  $X_{ijkl}$  stand for the value of the characteristic  $X$  for the  $l^{\text{th}}$  cultivating household from  $k^{\text{th}}$  group (small and others) of the  $j^{\text{th}}$  village of the  $i^{\text{th}}$  category. Then an unbiased estimate of the average for  $k^{\text{th}}$  group of the borrower beneficiary is given by:

$$\bar{X} \dots \dots k = \frac{1}{H_k} \sum_{i=1}^3 \frac{N_i}{n_i} \sum_{j=1}^{n_i} H_{ijk} \frac{1}{h_{ijk}} \sum_{l=1}^{h_{ijk}} X_{ijkl}$$

where:

$H_k$  = Estimated total number of borrower beneficiaries from the  $k^{\text{th}}$  group,

$$= \left\{ \sum_{i=1}^3 \frac{N_i}{n_i} H_{ijk} \right\}$$

$N_i$  = number of villages in the  $i^{\text{th}}$  category,

$n_i$  = number of sample villages from the  $i^{\text{th}}$  category,

$H_{ijk}$  = number of borrower beneficiaries from  $k^{\text{th}}$  group of  $j^{\text{th}}$  village of  $i^{\text{th}}$  category and

$h_{ijk}$  = number of borrower beneficiaries selected.

The average for all borrower beneficiaries is given by:

$$2) \bar{X} \dots = \frac{1}{H} \sum_{i=1}^3 \frac{N_i}{n_i} \sum_{j=1}^{n_i} \sum_{k=1}^2 H_{ijk} \frac{1}{h_{ijk}} \sum_{l=1}^{h_{ijk}} X_{ijkl}$$

where:

H = Estimated total number of borrower beneficiaries under the scheme.

The corresponding estimate for average non-borrower beneficiaries is given by:

$$3) \bar{X}' \dots k = \frac{\sum_{i=1}^3 \frac{N_i}{n_i} \sum_{j=1}^{n_i} H'_{ijk} \frac{1}{h'_{ijk}} \sum_{l=1}^{h'_{ijk}} X'_{ijkl}}{\sum_{i=1}^3 \frac{N_i}{n_i} \sum_{j=1}^{n_i} H'_{ijk}}$$

where:

$H'_{ijk}$  = total number of non-borrower beneficiaries from  $k^{\text{th}}$  group of  $j^{\text{th}}$  village of  $i^{\text{th}}$  category, and

$h'_{ijk}$  = number of non-borrower beneficiaries selected.

### Limitations of Data

2.11 As explained earlier, in the absence of the data relating to pre-investment position of borrower beneficiaries it was sought to have such information by canvassing the general schedule of enquiry among rainfed area cultivators. This comparison of post-development position of one group with the pre-development of another group is subject to some limitations inasmuch as whatever technological changes in agriculture that might have taken place over the years, difference in individual initiative, etc. have been ignored. Further, though it was envisaged to select rainfed area cultivators from the 8 selected villages, since the required number of such cultivators was not found in the selected villages, the general schedule of enquiry was canvassed among a few such cultivators selected from the neighbouring villages.

## CHAPTER 3

### SCHEME IMPLEMENTATION

The dimensions of the scheme as envisaged and as actually realised in Miryalguda taluka are shown below:

Item	As originally planned	Actual position
1. Total financial outlay (Rs lakhs)	150	146
2. ARDC refinance (Rs lakhs)	135	131
3. Area for development (acres)	45,158	44,465
4. Loan amount per acre (Rs)	305	318*
5. Cost of investment per acre (Rs)	305	455*

\* Survey data.

#### Progress of the Scheme under Study

3.2 The scheme was sanctioned by the ARDC in 1964 and the first disbursement was made in March 1965. However, implementation of the scheme gathered momentum only from October 1965. Further, though the scheme was scheduled to be closed by the end of December 1969, the time was extended upto end of July 1970.

3.3 The progress of the implementation of the scheme in Miryalguda taluka is shown in the following table:

1. Localised area	
i) Number of <i>ayacutdars</i>	10,306
ii) Area in acres	87,000
2. Loans disbursed by PLMB for land development	
i) Number	5,824
ii) Area in acres	45,158
3. Borrower beneficiaries who developed land by bulldozers under the State Government's reclamation scheme	
i) Number	736
ii) Area in acres	4,868

4. Borrower beneficiaries who developed land by manual and bullock labour	
i) Number	5,088
ii) Area in acres	39,597
5. Area developed year-wise (in acres)	
1965-66	3,325
1966-67	18,919
1967-68	15,613
1968-69	6,208
1969-70	400
	Total : 44,465
Of which :	
Partially developed area	2,823

### Land Development

3.4 Nearly one-third of the area in the *ayacut* under left canal was with slope above 3 per cent and about one-half was with slope between 2 per cent and 3 per cent. A part of the land shaping was done by engaging bulldozers available from the Engineering Section of the Department of Agriculture of the State Government. Nearly 10 per cent of the area for which loans were sanctioned could be reclaimed by machines. The rocky and undulating topography of Miryalguda taluka took more time for levelling and the whole process had to be spread over three to four years. Moreover, some of the cultivators, particularly those with large holdings did not level their lands at a stretch but did so piecemeal over a period of years depending on the size of their holdings.

3.5 During the initial stages, the pace of work was slow and halting. This was mainly because of two reasons: (i) Under the State Government's departmental reclamation scheme, a substantial subsidy was available for reclamation done with the help of machines. The cost per hour of working the bulldozer was Rs 45 of which Rs 20 was provided by the State Government as subsidy;\* (ii) The PLMB while disbursing loans gave preference to cultivators who were willing to undertake recla-

\* The subsidy was withdrawn later to induce farmers to engage manual and bullock labour for land shaping.

mation under the State Government's departmental scheme. However, later it was found that enough machines were not available to go round to cope with the work. The number of bullocks available in the villages of Miryalguda taluka was also found to be inadequate to meet the growing demand. Enthusiasm for land development was also dampened to some extent by the delay of 14 months in the release of canal water.

3.6 The CLMB was not able to prepare and supply technical plans to all cultivators of the scheme area. Sufficient technical staff could not be found to do all this work over the vast area within the stipulated time. In the absence of technical plans, the cost of land reclamation in general tended to be on the higher side than envisaged.

#### Cost of Land Development

3.7 The various items of work involved are removal of shrubs, erecting bunds, fencing, etc. Moreover, the cultivators have to excavate channels at their own cost.\* The following table shows the cost of land reclamation as envisaged in the scheme and actual on the basis of data collected in the general schedule of enquiry:

Type of work	(Rs per acre)	
	Envisaged cost	Actual cost
1. Land levelling	255	190
2. Bunding		72
3. Removal of shrubs		<u>31</u>
4. Initial manuring	50	125
5. Cost of water/waste water channels, etc.	**	37
Total :	<u>305@</u>	<u>455</u>

@ Average of Rs 270 per acre of land with 1% slope and Rs 340 per acre of land with 2% slope.

- \* In the initial stages, the State Government constructed the field channels at its own cost as an incentive for cultivators to go in for land development. The cost was to be recovered from cultivators in instalments.
- \*\* Provision for construction of water/waste water channels was not made in the scales of finance envisaged.



The cost escalation to the extent of 37 per cent, excluding cost of water/waster channels, was because of the increase in wage rates and prices of manures during the period.

### **Time-lag in Loan Disbursement**

3.8 The time taken by the PLMB between the receipt of loan application and disbursement of the first loan instalment was around 2 to 4½ months.† Loans amounting to Rs 5000 and above requiring meticulous investigations by the Cooperative Sub-Registrar (CSR) with the PLMB and clearance from CLMB were the ones which were delayed compared with loans involving smaller amounts.

### **Loans for Land Development and their Utilisation**

3.9 While sanctioning loans, in general, the PLMB took into consideration only 50 per cent of the value of land given as security for the loan as the eligibility margin. In the matter of calculating the value of land, the procedure adopted was to multiply the land revenue per acre (including water charges) by 60 in the case of wet lands and by 100 in the case of dry lands. Here it may be pointed out that the land revenue per acre in the case of wet land was very low and the size of the loan amount based on the above procedure of valuation of the land given as security tended to shrink, particularly in the case of small cultivators.

3.10 In order to enable the cultivators, particularly the small farmers, to borrow loans according to the prescribed scale of finance for land development under the scheme, the Government of Andhra Pradesh brought out an order in February 1965 permitting the valuation of land in the scheme area at a flat rate

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† The time-lag has since been reduced to 1 to 1½ months in cases where the cultivator had a clear title to the land to be mortgaged. The item of public enquiry has since been dispensed with. Also in clearcut cases the loan file after legal advice is sent to the CLMB for clearance and disbursements take place soon after.

of Rs 700 per acre in the case of land with 1 per cent slope and guaranteeing amounts in excess of Rs 350 upto Rs 500 per acre borrowed by cultivators. This enabled cultivators to borrow sizeable amounts depending on the slope for the purpose of developing their land. The table below shows the land mortgaged and amount borrowed by borrower beneficiary covered in the study :

Type of cultivator	Owued land per cultivator (Acres)	Land mortgaged per cultivator (Acres)	Loan amount per cultivator (Rs)	Loan per acre of mortgaged land (Rs)
Small	4.00	4.00	1204	301
All	9.90	9.18	2915	318

3.11 The average borrower beneficiary spent Rs 3435 for developing 7.55 acres of land as against the loan amounting to Rs 2915 made available to him by the PLMB. The balance was met by the cultivator himself. On the other hand, the small borrower beneficiary spent only Rs 899 for developing 3.61 acres of land out of the loan amounting to Rs 1204 borrowed from the PLMB.

### **Towards Better Implementation of Land Development Schemes**

3.12. Some suggestions for adequate organisational arrangements for the execution of land development work could be made: (i) Although the State Government has set up a Command Area *Ayacut* Development Council and a Command Area Development Department (CADD) for major irrigation projects in Andhra Pradesh such as Nagarjuna Sagar (right and left bank), Pochampad and Tungabhadra, it would appear that there is need for setting up an agency on the lines of Maharashtra Land Development Corporation (MLDC) charged with the responsibility of attracting the necessary finance and getting the work of land levelling and bunding operations done effi-

ciently<sup>(a)</sup>; (ii) Irrigation cess should be imposed on all cultivators of the command area irrespective of the fact whether they make use of the irrigation facility or not\*. This should induce some of the farmers to undertake land levelling and go in for land development loans; and (iii) In cases where the bulldozer was used for land levelling, it was found by cultivators that, in general, the bulldozer was not the right type of machine for such work except in cases where the land was rocky or slopes beyond 2 per cent. By and large, where the bulldozer was used for land levelling, the damage done to top soil was considerable with the sub-soil exposed due to over cutting. For land requiring precision levelling, it is perhaps better to use a small machine like 25-30 H.P. tractor and scraper.

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(a) The work of land shaping is now entrusted to the Agro-Industries Corporation, of Andhra Pradesh.

\* An Act imposing a special land tax has been passed in Andhra Pradesh which came into effect on 1 July 1976. (Details of the Act have been mentioned in Chapter 7). While passing the Act is on right lines, it is of crucial importance as to how the State Government machinery is geared to the task of implementing it.

## CHAPTER 4

### IMPACT OF LAND DEVELOPMENT ON THE FARM BUSINESS OF CULTIVATORS

The assumptions made while working out the economics of the scheme vis-a-vis the results obtained at the cultivators' level through field investigations are discussed in this chapter.

#### Cultivated Holding

4.2 The economics of the scheme was worked out on the basis of an average holding of 6 acres which was to be developed. The survey revealed that the area developed under the scheme by the average borrower beneficiary was 7.55 acres; the average non-borrower beneficiary developed 4.51 acres. The average small borrower beneficiary developed 3.61 acres, while the average area developed by the small non-borrower beneficiary was 1.90 acres.

#### Cropping Pattern

4.3 After an extensive soil survey of the command area and conducting experiments at some important places, the Department of Agriculture recommended the following cropping pattern for left bank *ayacut* as per its localisation as two-thirds wet and one-third dry:

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#### Wet Lands

*Kharif (June-October)*

*Rabi (November-March)*

#### Red Soils

Green manure crop of moong

Groundnut TMV-2

Wheat (Mexican)

S 227, S 308

Paddy: CH 45, ADT 27.

Bajra (Hybrid)

IR 8, Padma, Jaya

Blackgram

*Black Soils*

Paddy: High-yielding IR 8, Padma, Jaya	Groundnut TMV-2 Wheat (Mexican) S. 227, S. 308 Bajra (Hybrid) Blackgram
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**Irrigable Dry @***Kharif (June-October)*

Krishna Cotton  
Jowar-Swarna  
Chillies — G3

In actual practice, however, in the entire *ayacut* on the left side, where canal water was available in sufficient quantities from middle of July to end of March, mostly two crops of paddy were grown. Secondly, although it was envisaged originally to raise only a single wet crop of long duration during June to December, with the availability of high-yielding variety seeds for short duration paddy and abundant water from the canal, it was considered that a second wet crop could also be grown. Moreover, during the initial post-irrigation period, in order to initiate the dry cultivators of the area in switching over from dry cultivation to cultivation of wet crops and also the need to boost food production, two crops of paddy were allowed to be grown.

4.4 The cropping pattern as revealed by the survey data bears out the assumption that the cultivators would switch over to paddy cultivation during kharif. But during rabi the actual position was not as envisaged, with the general attitude of cultivators being overwhelmingly to grow paddy instead of the recommended crops of groundnut, wheat, bajra, blackgram, etc. The percentage of area under different crops to the gross cropped benefited area, of borrower beneficiaries and non-borrower beneficiaries is given below:

@ Lands suitable to grow light irrigated crops like hybrid jowar, bajra, ragi, maize and wheat.

(Per cent)

Crop	Borrower beneficiaries		Non-borrower beneficiaries	
	Small	All	Small	All
Paddy	70	89	98	99
Bajra	16	3	—	—
Jowar	2	..	—	—
Variga	2	..	—	—
Korra	1	..	—	—
Redgram	1	..	—	—
Groundnut	3	5	2	1
Castor	—	—	—	—
Chillies	5	..	—	—
Blackgram	—	—	—	—
Tobacco	..	..	—	—

4.5 In the tail-end areas which are dominated by small cultivators, mostly bajra, jowar and chillies were grown in about one-sixth of the gross cropped area due to non-availability of adequate water to cultivate paddy. Although an essential input like water was not available adequately to the cultivators in the tail-end areas, it was observed that with the available water they were making a good job of the situation prevailing by raising commercial crops like chillies, tobacco, etc. This enabled them to repay their PLMB loan instalments taken for land development. This, however, was not the position in respect of all the cultivators as not even a little water was available to a sizeable number of cultivators in certain tail-end areas.

### Cropping Intensity

4.6 In the economics of the scheme, the cropping intensity was proposed to be increased to 200 per cent. The survey data revealed that the cropping intensity achieved by the average-borrower beneficiary was 185 per cent. On the other hand, the cropping intensity of the average non-borrower beneficiary was 199 per cent.

### Yield Rates

4.7 The data on yield per acre of different crops grown by the average borrower beneficiary in the area developed under

the scheme and by the average non-borrower beneficiary are shown below:

(Yield in qtls. per acre)

Crop	Actual				Anticipated under the economics of the scheme
	Borrower beneficiaries		Non-borrower beneficiaries		
	Small	All	Small	All	
Paddy	12.94	12.39	11.85	12.45	12.00
Bajra	2.42	2.33	1.00	—	—
Jowar	2.09	2.00	—	—	—
Variga (small millet)	2.09	2.00	—	—	—
Korta ( " )	1.38	1.25	2.00	—	—
Redgram	0.38	0.25	—	—	—
Groundnut	2.83	5.74	3.43	2.10	5.00
Castor	—	2.25	—	—	—
Chillies	2.00	2.00	—	—	—

The yield of 12 qtls. per acre was assumed in the economics of the scheme for paddy and the yield rate per acre of paddy in respect of the average borrower beneficiary as well as non-borrower beneficiary hovered around 12.50 qtls. during the reference year. Small borrower beneficiaries reported slightly higher yield rate as compared with that of borrower beneficiaries. The yield rates might have been higher had the availability of chemical fertilisers during 1973-74 been adequate at reasonable prices. As regards groundnut, the average borrower beneficiary reported the yield at 5.74 qtls. per acre which was slightly higher than the rate of 5 qtls. per acre assumed in the economics of the scheme.

### Gross Produce

4.8 The value of gross produce harvested by the average borrower beneficiary was higher at Rs. 14,283 as against Rs. 9480 of the average non-borrower beneficiary. This was due to the higher net cropped area of the former (7.55 acres) than that of the latter (4.51 acres). However, the value of gross produce per acre of net cropped area in the case of borrower

beneficiary was lower at Rs. 1892 as against Rs. 2102 of the non-borrower beneficiary. The reason for this was that the cropping intensity attained by the latter was 199 per cent as against 185 per cent of the former. A similar trend but wider in variation was discerned in so far as small cultivators in the two categories were concerned as can be seen from the table below:

Particulars	Borrower beneficiaries		Non-borrower beneficiaries	
	Small	All	Small	All
1. Net cropped area (Acres)	3.61	7.55	1.90	4.51
2. Gross cropped area (Acres)	5.58	14.00	3.73	8.98
3. Cropping intensity (Per cent)	155	185	196	199
4. Value of gross produce per cultivator (Rs)	4,860	14,283	3,756	9,480
5. Value of gross produce per acre of net cropped area (Rs)	1,346	1,892	1,977	2,102
6. Value of gross produce per acre of gross cropped area (Rs)	872	1,020	1,008	1,055

4.9 In the economics of the scheme, the value of gross produce per acre of net cropped area was estimated at Rs. 1000 which was worked out on the assumption that paddy during kharif and groundnut during rabi would be raised. Output prices used in valuing gross produce in the economics of the scheme and in the survey are as follows:

Crop	(Rupees per quintal)	
	Price used in the survey	Prices used in the economics of the scheme
1. Paddy		
<i>Kharif</i>	77.10	50.00
<i>Rabi</i>	75.00	
2. Groundnut	202.00	80.00
3. Bajra	87.00	

Note: Prices prevailing during harvest seasons in the Regulated Market in Miryalguda have been taken. Allowance for transporting the grains from the farmers' villages to the market yard of the regulated market has not been made in the above prices.



It may be observed that the borrower beneficiaries were benefited more than anticipated in the economics of the scheme due to the price advantage and cultivation of two crops of paddy in a year during which there was a sellers' market.

### Cost of Cultivation

4.10 In the economics of the scheme, the cost of cultivation was worked out at Rs. 250 per acre of cropped area. The survey results, however, indicated that the actual costs were nearly double those estimated in the economics of the scheme. This may be attributed to higher wage rates, cost of fertilisers, seeds, etc. The expenditure incurred by the selected borrower beneficiaries and non-borrower beneficiaries on important items of current farm operations as percentage of total cost of farm production is given below:

Item	Borrower beneficiaries		Non-borrower beneficiaries	
	Small	All	Small	All
<b>1. Cost of cultivation</b>				
a) Per acre of gross cropped area (Rs)	394	539	441	542
b) Per acre of net cropped area (Rs)	608	999	867	1080
<b>2. Percentage of variable cost to total cost :</b>	92 <sup>a</sup>	92	88	93
<b>Of which :</b>				
a) Fertilisers and manures	46	42	59	43
b) Seeds	6	6	6	5
c) Wages	39	43	22	43

The cost of cultivation per acre of gross cropped area was around Rs. 540 in respect of both the categories of cultivators. Fertilisers and manures and wages to labour, each constituted 43 per cent and the value of seeds used formed 6 per cent of the total cost of cultivation. The relatively high proportion spent on fertilisers may be attributable to the fact that in 1973-74 cultiva-

tors in the scheme area paid nearly three times the controlled prices for fertilisers. The cost of cultivation as percentage of the value of gross produce in respect of the average borrower beneficiary at 53 was slightly higher than that of the non-borrower beneficiary at 51.

4.11 The cost of fertilisers and manures used accounted for 46 per cent and 59 per cent of the total cost of cultivation in respect of the average small borrower beneficiary and the small non-borrower beneficiary, respectively. Wages paid to labour, however, constituted a comparatively smaller proportion in the total cost of cultivation both for the average small borrower beneficiary as well as the small non-borrower beneficiary at 39 per cent and 22 per cent, respectively.

4.12 Expenses incurred by the average small borrower beneficiary for payment of wages to hired labour were lower than those incurred by the average borrower beneficiary since farm operations were carried out to a much greater extent with the help of family labour in their case. The involvement of family labour in the total labour cost in the case of small borrower beneficiaries was 37 per cent as against 10 per cent for all borrower beneficiaries, while in the case of small non-borrower beneficiaries and all borrower beneficiaries it was 38 per cent and 6 per cent, respectively. The fact that more outside labour was employed by the average borrower beneficiary and non-borrower beneficiary, besides creating employment opportunities to agricultural labourers, enabled them to divert their family members from farm operations to non-farm activities like dairying, trading, etc.

### **Incremental Income**

4.13 The index for measuring benefits accruing to the borrower beneficiaries is the incremental farm income derived as the excess of post-development net income from the benefited area over the pre-development net income from the same area. For the estimation of the pre-development net farm income, it was necessary to collect the relevant data regarding the pre-development position from the respondent borrower beneficiaries. In the present evaluation study, the required data

to arrive at the pre-development net farm income were not collected from the borrower beneficiaries since the recall period was long and they were not likely to recollect all the activities on the benefited area in the pre-development period due to memory lapse. Instead a control sample of rainfed cultivators was selected to represent the position of borrower beneficiaries in the pre-development period.

4.14 The survey results indicate that per acre incremental income of the average borrower beneficiary was lower at Rs. 769 than that of the average non-borrower beneficiary at Rs. 898. A similar trend was evidenced in the case of the small borrower beneficiaries in the two categories.

### **Return on Investment**

4.15 In order to analyse the financial feasibility of investment under the scheme three indicators viz. benefit-cost ratio (BCR), the net present worth (NPW) and the internal rate of return (IRR), have been worked out. While working out these indicators, the following assumptions were made :

i) The life of the investment is taken at 25 years.

ii) The flow of benefits has been worked out on the basis that 25 per cent of the benefits after full development would accrue to the cultivator in the first year of investment, 50 per cent in the second year and in full from third year onwards. Benefits from 3rd to 25th year have been taken as constant. Production costs are also taken on a similar basis.

iii) For working out the NPW and BCR, the factor used for discounting benefits and costs is 7½ per cent i.e. the rate of interest charged by the PLMB for loans disbursed under the scheme.

The three indicators worked out relating to NPW, BCR and IRR showed that the investment undertaken by all types of borrower beneficiaries was highly profitable. The data in this regard are indicated below :

Borrower beneficiaries	Benefited area per cultivator (Acres)	Cost of investment (Rs)	NPW (Rs)	BCR	IRR (Per cent)
Small	3.61	899	23,120	2.05	More than 50
Others	10.65	5421	82,416	1.71	More than 50
All	7.55	3435	56,908	1.78	More than 50

### Repayment Capacity

4.16 The repayment capacity of the average borrower beneficiary in the present study is calculated on the basis of the formula recommended in the Report of the Review Team on Economic Appraisal and Utilisation Studies (ARDC). Under this formula, the repayment capacity is to be worked out with reference to two parameters i.e. the size of the farm income before development and the level of incremental income; the latter is divided into two percentage parts, one representing the allowance for higher consumption and the other for repayment capacity. For a given level of incremental income, the allowance for higher consumption goes on declining with an increase in the level of farm income before development, with stipulations of a floor at Rs. 300 and ceiling at Rs. 1000. The data relating to the repayment capacity so worked out on the basis of incremental income derived in the present study for the average small and other borrower beneficiaries are presented in the following table. The annual instalment amount paid towards the PLMB and other loans are also indicated therein.

Item	(Rs)		
	Average Small	Borrower Others	Beneficiary All
1. Amount borrowed from PLMB	1204	4261	2915
2. Repayment capacity	1632	7584	4806
3. Instalment due to PLMB	152	533	365
4. Amount actually repaid to PLMB	145	496	341
5. Amount repaid towards other loans	204	282	248
6. Total amount repaid (4+5)	349	778	589

The level of income available for the repayment of the PLMB loan from the net cropped area of 7.55 acres developed by the average borrower beneficiary was Rs. 4806. The borrower beneficiaries could have repaid a larger amount per annum and thus cleared the loan in a shorter period. Although the position was favourable, it is observed that as against Rs. 365 due to PLMB (annual instalment), only Rs. 341 was actually repaid by the average beneficiary cultivator during the reference year. The proportion of cultivators reporting repayment to PLMB was 86 per cent. As regards the average small borrower beneficiary, the level of income available for repayment of the loan with net cropped area at 3.61 acres was comparatively low at Rs. 1632; about 78 per cent of the small borrower beneficiaries reported repayment of the loan to PLMB and the amount repaid per cultivator was Rs. 145 though the instalment due was Rs. 152.

4.17 Thus, the borrower beneficiaries, small as well as others reported a highly comfortable repaying capacity in relation to the instalments due to PLMB. It is conceivable that the level of surplus income required for improving living standards while working out the repayment capacity was higher than envisaged particularly in the context of chronic drought conditions prevailing during the pre-irrigation period in the area. Even so, the repaying capacity of the average borrower beneficiary was quite comfortable. In fact, based on the experience of the scheme under study, the CLMB revised the repayment period from 15 years to 12 years in the subsequent schemes.

### **Additional Employment Opportunities**

4.18 The work relating to development of land and intensive cultivation of irrigated crops in the command area not only increased agricultural production but created additional employment opportunities also. Thus, initially land shaping involved deployment of labour for removal of shrubs, levelling, bunding, fencing as well as excavation of field channels, waste water channels, etc. Subsequently, intensive on-farm operations in the irrigated area generated employment for additional labour in the post-development period. As per the data collected from the respondent borrower beneficiaries, the labour employed for

land shaping and excavating field channels, waste water channels, etc. worked out, on an average, to roughly 70 man days per acre. Since the total area developed under the scheme taken up for the study was around 44 thousand acres, the additional employment opportunities created by the scheme in the development of this area for irrigated cultivation could be estimated at 30 lakh man days in the command area in Miryalguda taluka during 1964-69.

4.19 The labour employed by the average borrower beneficiary for cultivation of one acre of irrigated land in 1973-74 was estimated at about 111 man days as against the labour of 11 man days employed for cultivation of one acre of rainfed area prior to development of his land. Thus, the additional employment opportunities for agricultural labour created in the year 1973-74 in the scheme area over and above the annual labour employment in the pre-development period for cultivation operations on 44,000 acres developed under the scheme is estimated at 44 lakh man days.

### **Agricultural Production**

4.20 As a result of canal irrigation, acreage under paddy accounted for 92 per cent of the area developed under the scheme and the increase in production of rice estimated at 62 thousand tonnes in 1973-74. Area under groundnut during the post-development period also increased by 4 per cent and production is estimated to have increased by 2 thousand tonnes. Acreage and production of crops grown under rainfed conditions in the pre-development period — foodgrains (jowar, bajra), pulses (redgram, horsegram) and castor — however, declined.

### **Scope for Dairy Development**

4.21 The importance of receipts from sale of milk and milk products in total cash receipts other than from cultivation indicates that, in the scheme area, there is good scope for dairy development. There is also an animal husbandry centre in Miryalguda taluka which can help in breeding exotic varieties of milch cattle in the region. However, because of large-scale growing of paddy there are no good pastures for grazing cattle.

Before embarking on any scheme for dairy development, some areas will have to be earmarked for deliberately growing suitable kind of grass for grazing the dairy cattle.

### **Manufacturing Units**

4.22 Obviously, the future development of industries in the scheme area will continue to be, at least for a few years to come, agro-based. As a result of increased agricultural production in the post-development period, processing units, the most important among them being rice mills, have increased in the region. There are also a number of groundnut decortication and crushing plants in the rural centres. The large cattle population is a source for the development of tannery and setting up units manufacturing shoes and other footwear. A modern sugar factory is being set up near Miryalguda which should lead to a switch over from cultivation of paddy to sugarcane by some cultivators. Small workshops connected with manufacture of agricultural implements, repairing and servicing of tractors (whose number has increased considerably in recent years) are also springing up.

## CHAPTER 5

### LOAN TRANSACTIONS AND ASSETS POSITION OF CULTIVATORS

In addition to the data directly connected with the investment and items involved in the economics of the scheme, data on loan transactions, assets position and changes in assets position of cultivators, expenditure on farm incurred during the reference year (1973-74) etc., were collected in the study.

#### Loan Transactions

5.2 The data relating to loan transactions and indebtedness are given in Statements 6 to 11. The total debt outstanding as on 30 June 1974 per average borrower beneficiary amounted to Rs. 2,991 of which debt towards loans borrowed subsequent to investment constituted about 32 per cent (Statement 6). The proportion of the debt of the average small borrower beneficiary towards loans borrowed subsequent to investment was relatively larger at about 60 per cent of the total outstanding debt amounting to Rs. 2088 as on 30 June 1974.

5.3 The two main purposes for incurring debts that have a direct bearing on agricultural output are current and capital expenditure on farm. Of the total outstanding debt of the average borrower beneficiary, about 68 per cent was towards loans borrowed for capital expenditure on farm and 8 per cent was towards loans for current expenditure on farm. The remaining 24 per cent was towards loans borrowed for 'other purposes' under which was included family expenditure. The average small borrower beneficiary, on the other hand, incurred 57 per cent of the outstanding debt towards 'other purposes'; current expenditure on farm accounted for 2 per cent and capital expenditure on farm 41 per cent (Statement 7).

5.4 The outstanding debt as on 30 June 1974 of the average non-borrower beneficiary was perceptibly low at about 40 per



cent that of the average borrower beneficiary. One-fourth of the outstanding debt was towards loans borrowed for current farm expenditure and the remaining three-fourths for 'other purposes.' There were no outstandings towards capital expenditure on farm.

### **Borrowings during 1973-74**

5.5 Only 21 per cent of the borrower beneficiaries reported borrowings during the reference year and the average amount borrowed per cultivator was Rs. 369. About 54 per cent of the total borrowings of the average borrower beneficiary was for current expenditure on farm whereas amount borrowed for capital expenditure on farm was negligible. On the other hand, borrowings of the average small borrower beneficiary for current expenditure on farm formed only 9 per cent of the total borrowings (Statement 8).

5.6 Of the 21 per cent who borrowed during the year, 7 per cent reported borrowings from co-operatives and the rest 14 per cent borrowed from private agencies. The average amount borrowed per borrower beneficiary from co-operatives was Rs. 128 and this constituted 35 per cent of the total borrowings (Statement 9).

5.7 About 42 per cent of the non-borrower beneficiaries reported borrowings during the year and the average amount borrowed per cultivator was Rs. 608. About 70 per cent of the total borrowings in their case was for current farm expenditure. Borrowings for current farm expenditure in the case of small non-borrower beneficiaries constituted 25 per cent of the total borrowings; borrowings for capital expenditure on farm were not reported by these cultivators.

5.8 Only 5 per cent of the non-borrower beneficiaries reported borrowings from co-operatives and the average amount borrowed per cultivator worked out to Rs. 159. About one-fourth of the total borrowings of these cultivators was from co-operatives and the rest from private agencies. None of the small cultivators in the category borrowed from any institutional agency during 1973-74.

### Repayments

5.9 About 89 per cent of the borrower beneficiaries reported repayments during the year and the amount repaid per cultivator was Rs. 507. Most of the repayments were towards old debts i.e. loans borrowed prior to the reference year. All the repayments made during the year by small cultivators in the category were towards old debts. More than two-fifths of the non-borrower beneficiaries reported repayments during the year. Of the total repayments of Rs 536 per cultivator, about 54 per cent was towards loans borrowed during the reference year. However, small cultivators in the group reported 65 per cent of the total repayments towards old debts and the remaining 35 per cent towards loans borrowed during 1973-74 (Statement 10).

### Debt as Percentage of Value of Assets and Gross Produce

5.10 As on 30 June 1974, total debt outstanding of the average borrower beneficiary constituted 4 per cent of the total value of his assets. In the case of small cultivators, the corresponding percentage was more than double that of borrower beneficiary. For non-borrower beneficiaries total debt outstanding formed 2 per cent of the total value of assets; the corresponding percentage for small cultivators was, however, thrice that figure (Statement 11).

5.11 Total debt outstanding as on 30 June 1974 formed 21 per cent of the total value of gross produce in the case of borrower beneficiaries and 43 per cent for small borrower beneficiaries. For non-borrower beneficiaries, debt constituted 12 per cent of the total value of the gross produce and 30 per cent for small cultivators in the category.

### Total Value of Assets

5.12 The total value of assets as on 30 June 1974 of the average borrower beneficiary and non-borrower beneficiary was Rs. 85,727 and Rs. 61,445, respectively; the corresponding value of assets of the average small borrower beneficiary in the two categories was Rs 27,884 and Rs 18,414, respectively. The share of each of the constituent items in the total value of assets as on

30 June 1974 expressed in terms of percentage is given in the table below :

Assets	Borrower beneficiaries		Non-borrower beneficiaries	
	Small	All	Small	All
1. Land	80.5	82.2	77.8	76.1
2. Livestock	6.7	5.1	8.9	11.3
3. Agricultural equipment	0.4	1.3	0.8	0.5
4. Transport equipment	1.5	0.8	1.7	0.8
5. Durable household assets	1.0	1.9	2.5	2.3
6. Financial assets	0.6	0.4	—	—
7. Residential buildings	8.0	7.3	7.7	5.7
8. Non-residential buildings	1.3	1.0	0.6	0.6
9. Others	—	—	—	2.7
<b>Total :</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Owned land constituted the most important item of the total assets; the value of owned land accounted for as much as 82 per cent of the total value of assets for the average borrower beneficiary and 76 per cent for the average non-borrower beneficiary. While on the issue of land as an asset, it may be stated that in the scheme area land values recorded a phenomenal increase ranging from Rs 300 — Rs 500 per acre before irrigation to Rs 9,000 — Rs 10,000 during the post-irrigation period. Residential buildings formed the second important constituent item for borrower beneficiary, while for non-borrower beneficiary livestock constituted the second important item.

5.13 Although the total value of assets of the average borrower beneficiary at Rs 85,727 as on 30 June 1974 was significantly larger than the outstanding debt at around Rs 3,000, it may be pointed out that land holding alone accounted for as much as 82 per cent of the total assets.

5.14 Of the total assets valued at Rs 85,727 of the average borrower beneficiary as on 30 June 1974, assets worth Rs. 3,139 or roughly 4 per cent were acquired after development indicating

that the cultivators who were given loans for land development under the scheme turned out to be quite resourceful and confirmed their creditworthiness. In the case of non-borrower beneficiaries assets worth Rs 3,944 or 6 per cent of the total assets were acquired after development.

5.15 Accretion to farm assets were predominant at 90 per cent of the total assets acquired after development, non-farm and financial assets accounting for 8 per cent and 2 per cent, respectively in the case of borrower beneficiaries; the corresponding percentages in the case of non-borrower beneficiaries were 50, 48 and 2 (Statement 12).

### **Capital Expenditure on Farm**

5.16 Agricultural implements and machinery represented the major item on which about 60 per cent of the borrower beneficiaries incurred capital expenditure during 1973-74, followed by land development and purchase of livestock, on which 19 per cent and 17 per cent of the borrower beneficiaries, respectively, incurred capital expenditure (Statement 13). The average amount of capital expenditure incurred on agricultural implements and machinery by the average borrower beneficiary was Rs 153 and that on land development and livestock Rs 121 and Rs 222, respectively. About 88 per cent of the expenditure on land development was towards land levelling. The proportion of cultivators reporting and also the expenditure incurred by the average borrower beneficiary on capital expenditure on farm were more than the corresponding proportion and amount for the average non-borrower beneficiary.

## CHAPTER 6

### CULTIVATORS' LINKS WITH INSTITUTIONAL AGENCIES

Despite poor texture and low fertility of soils in the area, during the post-irrigation period, the production of paddy has substantially increased. This is partly attributable to adoption of improved farm practices like the use of high-yielding variety seeds, fertilisers, insecticides, etc. In this connection, the role of extension agencies in bringing about the technological improvements must be acknowledged.

#### **Improved Farm Practices**

6.2 More than 90 per cent of the borrower beneficiaries as well as non-borrower beneficiaries reported the use of high-yielding variety seeds in 1973-74. The demand for fertilisers was high in the scheme area but there was acute shortage in the supply during 1972-73 and 1973-74. Further, the prices of fertilisers, particularly, of the popular varieties, increased sharply. The Department of Agriculture made significant changes in the recommended dosages in the wake of uncertain and irregular availability and advised more reliance on farm yard manure, green manure, compost, etc. The proportion of borrower beneficiaries and non-borrower beneficiaries reporting use of insecticides was relatively low at 49 per cent and 57 per cent, respectively; the corresponding proportion of small farmers using insecticides was only 33 per cent and 38 per cent.

#### **Present set up of Extension Agencies**

6.3 In Miryalguda taluka, there are at present 17 seed distribution centres, 13 fertiliser distribution centres, 26 centres for distributing agricultural implements, 5 centres distributing pesticides, 6 animal husbandry sub-centres and one animal husbandry development centre. A branch of the Agro-Industries Corporation of the State is located in Miryalguda, which supervises the sales and servicing of agricultural machinery in the taluka.

6.4 Although the use of chemical fertilisers for cultivation is quite extensive among the cultivators of the area, it would appear that the extension agencies can contribute to a greater extent towards improving yields by suggesting the application of the right type of fertilisers to particular types of soils. As regards seeds, a majority of the cultivators reported use of improved seeds for paddy.

6.5 At present the personnel for the extension work is drawn from various departments of the Government. Their preoccupation with developments in their parent departments seems to be interfering with their interest in the cultivators' problems. In this connection, an IDA team headed by Mr. Benor had suggested that the extension personnel at various levels must be brought under a single line of command with continuous facilities for training at each level. This suggestion is being considered by the authorities.

6.6 Mention may be made of the commendable work done during the reference period of the study by some private sector companies in conducting model farms/demonstration plots in the irrigated areas of Miryalguda taluka. Such work could undoubtedly pave the way to some extent in inculcating among the cultivators of the area the habit of using the right type of inputs, timeliness, dosage, etc. However, it is not clear how far these model farms/demonstration plots have induced the cultivators in improving the application of improved farm practices as a large percentage of respondents did not report active participation in this type of activity.

6.7 The short-term credit requirements of cultivators for seasonal agricultural operations were met by the primary credit societies and the branch of the Nalgonda Central Co-operative Bank in Miryalguda taluka. The practice in the area before development was to insist on mortgage of unencumbered immovable property as security for loans in excess of Rs 100. The study team set up by the ACD of the Reserve Bank of India in 1962 to work out the credit requirements of the cultivators of the area in the post-irrigation period, found the co-operative institutions in the Nalgonda district weak. The study emphasised that the financial position of Central Co-operative Bank need-

ed to be strengthened to meet the higher demand for short-term loans in the area during the post-irrigation period. The continuance of the Government contribution to the share capital of the Nalgonda Central Co-operative Bank was recommended so as to place it on a sound basis. As regards the primary co-operative societies, the study team found their number inadequate since some villages in the Miryalguda taluka were not covered by co-operative societies. Nearly one-fifth of the societies were working at a loss and about half of the number of societies in the taluka had overdues exceeding 50 per cent of demand.

6.8 The position during 1973-74 was that the number of primary credit societies had increased to cover almost all the villages of the taluka and the Central Co-operative Bank was functioning in Miryalguda town. There were also three branches of scheduled commercial banks in the taluka. The financial position of the primary credit societies continued to be weak. The terms of raising short-term loans for production purposes were sought to be eased by the introduction of the crop loan system under which the security aspect of the loan transaction was not to be given primary importance. In the project area, short-term loans could be granted upto Rs 2,500 to small cultivators and upto Rs. 4,000 to other cultivators if they created a charge on the produce and/or other movables. However, neither the crop loan system was followed nor full finance for seasonal agricultural operations appear to have been given to the cultivators in the area. The survey data showed that only 7 per cent of the borrower beneficiaries and 5 per cent of non-borrower beneficiaries had obtained crop loans in 1973-74.

6.9 There was only one wholesale regulated market in Miryalguda taluka at Miryalguda town itself, during the reference year. This regulated market had statutory powers for procurement of foodgrains in the areas under its jurisdiction. The cultivators in the area had to sell paddy through this regulated market or the Food Corporation of India compulsorily. As regards the Miryalguda Co-operative Marketing Society, it did not deal in marketing produce of its members but confined itself only to the distribution of chemical fertilisers and consumer

goods. Data collected in the present study about the agencies through which cultivators sold their produce in 1973-74 indicated that borrower beneficiaries sold one-third of their produce through the regulated market and the Food Corporation of India and remaining two-thirds to local traders.



## CHAPTER 7

### WATER MANAGEMENT

The slanting topography of Miryalguda taluka is supposed to serve as natural drainage. Nevertheless, because of the field to field flooding type of irrigation prevalent in the area, there is need for field drains. Since not much attention has been paid to the provision of drainage channels at the field level, parts of the area has been rendered unfit for cultivation due to waterlogging and salinity conditions@.

#### Tail-end Problem

7.1 In the scheme area, because of the practice of raising two crops of paddy which is a high water consuming crop, use of water is excessive and consequently the fields at the tail-end suffer. This difficulty becomes all the more serious on account of field to field flood-irrigation as a result of which excessive water is consumed in the upper reaches where canal water is available in plenty. Two more factors have added to the difficulties: (i) cultivation outside the area localised for irrigation, anti-malaria zones and *banchara* lands (waste lands) through breaching, cross bunding, etc.\* and (ii) absence of proper mechanisms to control the flow of water like shutters and sluices in minor distributories because of which unscrupulous cultivators in the upper reaches are able to draw extra discharge than designed.

7.2 During the reference year 1973-74, in 11 out of the 74 villages under the *ayacut* in Miryalguda taluka there was chronic

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@ The problems of waterlogging, salinity and alkalinity have not assumed alarming proportions with roughly 15% of the *ayacut* on the left-bank being so affected. However, it would be better to initiate preventive measures like providing field drains, carrying out soil amendments, etc. so that conditions do not deteriorate at a later stage.

\* The percentage of land under unauthorised cultivation is estimated at 18 per cent of the area localised for irrigation.

insufficiency of water for cultivation of irrigated crops due to their location at the end of distributories. The tail-end villages, area localised and area developed but not receiving adequate water for cultivation are shown below:

(Area in acres)			
No.	Tail-end village	Area localised for irrigation	Area developed but not receiving adequate water for cultivation
1.	Wadapalli	2,714	1,872
2.	Irkiguda	654	347
3.	Mudumanikyam	728	728
4.	Adivi Devulapalli	4,950	2,621
5.	Chityal	153	153
6.	Belanapalli	750	424
7.	Rajavaram	1,915	1,031
8.	Surepalli	1,390	493
9.	Kesavapur	2,520	1,402
10.	Mulkalkalva	597	442
11.	Veralapalem	1,429	342
Total :		17,800	9,855

Source : Revenue Divisional Office, Miryalguda.

7.3 It can be seen that on the one hand, while the lands have been developed with LMB finance by the cultivators, as there is no adequate or assured supply of water from the canal, irrigated crops have not been raised; on the other hand, since the loan instalments have become due for repayment, there is demand on the cultivators who have borrowed loans from the LMB for land development to repay the loan instalments. With meagre income from cultivation of rainfed crops, there have been instances of default in the repayment of loans in some tail-end areas. On considerations of equity, cultivators who have borrowed loans from PLMB and developed their lands ought to get canal water at least for raising one irrigated crop.

7.4 Ensuring adequate supply of water to tail-end areas is essentially a problem connected with efficient water management. The cultivator has to be made conscious of the colossal

wastage of water at present going on in the area. Discipline has to be enforced in the matter of cropping pattern, prevention of unauthorised irrigation of lands outside the localised area by penalising offenders committing breach of canals, cross bunding, etc., if necessary, through an enactment. These have been brought to the notice of the authorities in the Irrigation Department of the Government of Andhra Pradesh by the ARDC from time to time. As a result of these efforts on the part of the ARDC and persistent demand from cultivators in tail-end areas to improve their lot, the Irrigation Department has initiated certain steps to improve the situation<sup>+</sup>.

### Water Rates

7.5 One of the solutions to the problem of better water utilization appears to be to make the cultivator pay at the market rate for the water he uses for cultivation after the initial 2-3 years of development when his new agriculture stabilises. Water rates in the NSP area were first collected in 1969 i.e. two years after the release of water from the canal in 1967. The rates are collected by the Revenue Department along with land revenue. On an average, a cultivator paid Rs 25 per acre for growing two crops of paddy (Rs 15 for the kharif crop and Rs 10 for the second crop) during the reference period of the study.

7.6 After the upward revision of these rates in August 1974, the cultivator paid Rs 50 per acre for growing two crops of paddy. The following table shows the original and revised rates on the left-bank canal:

	(In Rs per acre)	
	Original rate	Revised rate
1. Paddy	15	30
2. Irrigated dry crops (jowar, maize, ragi, etc.)	10	20
3. Sugarcane	30	60
4. Second crop (wet)	10	20

+ Steps are under way to instal the necessary regulatory mechanisms on the left bank canals. Some supplementary schemes involving the construction of small anicuts across waste water channels and excavation of fresh link canals thereby diverting waste water to the dried up canals in tail-end villages have also been taken up.

Even after doubling the water rates, the amount paid for using canal water in the cultivation of two crops of paddy works out only to 5 per cent of the value of gross produce. Thus, as the rates are nominal compared with the substantial benefits accruing to the farmers from irrigation facilities, they are not conducive to encourage efficiency in the use of water in the scheme area. Also the rates do not vary substantially from crop to crop except perhaps in the case of sugarcane, (area under which is negligible in the left bank) so as to encourage cultivation of some crops and discourage others.

7.7 An important aspect in the levy of water rates is whether the rates at which they are actually collected are in alignment with the economic rate. The economic rate depends on: (i) the cost of investment involved in maintaining the project and (ii) the number of farmers in the command area enjoying the benefits of irrigation. Here it may be pointed out that the charges should be collected from all the land owners in the area irrespective of the fact whether they use the irrigation facility or not since the practice of unauthorised use of water from the canal for cultivation outside the localised area is prevalent. It may be added that the rates should be sufficiently high so as to ensure the recovery in full of the operational and maintenance expenses of the project. In case there is a wide gap in the economic rate and the actually collected rate, efforts should be made to reduce the same. The position may have to be reviewed every three years or so in order to ensure that the whole operation at least breaks even.

7.8 Besides water rates, it was proposed to collect a betterment cess in the command area as far back as 1972. But so far there have been no collections worth mentioning under this head. However, the Government of Andhra Pradesh has enacted a legislation on 19 April 1976 imposing a special land tax in the command area of irrigation schemes undertaken by the Government in view of the substantial benefits accruing to the beneficiaries from the irrigation projects. The rates of special land tax are as follows:

Nature of land	Rates of special land tax (Rs. per acre)		
	Localised as irrigated dry	Localised as single wet	Localised for two irrigated crops
1	2	3	4
1. Registered dry land :			
If land revenue per acre payable thereon is :			
a) One rupee or below	170	250	375
b) Above one rupee but Rs. 1.50 or below	200	300	450
c) Above Rs. 1.50 but Rs 2 or below	230	350	525
d) Above Rs 2 but Rs 2.50 or below	260	400	600
e) Above Rs 2.50 but Rs 3 or below	300	450	675
f) Above Rs 3	330	500	750
2. Registered wet land		100	150

Note : 1. The Special land tax is in addition to the land revenue payable thereon by the owner.

2. The Special land tax is payable by an owner under this Act in ten equated annual instalments. It is payable by all land owners in the area capable of being benefited irrespective of non-enjoyment of the benefit where such non-enjoyment is due to any action or inaction on the part of owner or other persons interested in the land.

The above rates of special land tax when collected in addition to the land revenue, should substantially add to the State Government exchequer and cover a part of the capital outlay and current expenditure on the Nagarjuna Sagar Project.

## Statement 1 : TOTAL COST OF DEVELOPMENT @

(Amount in Rs per acre)

Items of work	Borrower Beneficiaries			Non-borrower Beneficiaries		
	Small	Others	All	Small	Others	All
1	2	3	4	5	6	7
<b>1. Land levelling</b>						
i) Hired labour	72	172	152	41	123	98
ii) Family labour	34	22	25	102	20	46
iii) Bullock power	9	14	13	5	15	12
Total :	115	208	190	148	158	156
	(46)	(41)	(42)	(47)	(39)	(41)
<b>2. Bunding</b>						
i) Hired labour	25	65	57	28	48	42
ii) Family labour	17	14	15	36	9	17
Total :	42	79	72	64	57	59
	(17)	(16)	(16)	(20)	(14)	(15)
<b>3. Removal of shrubs and fencing</b>						
i) Hired labour	3	22	18	13	28	23
ii) Family labour	6	16	13	2	5	4
Total :	9	38	31	15	33	27
	(4)	(7)	(7)	(5)	(8)	(7)
<b>4. Excavation of water channels</b>						
i) Hired labour	12	27	24	4	23	17
ii) Family labour	10	11	11	8	6	7
Total :	22	38	35	12	29	24
	(9)	(7)	(8)	(4)	(7)	(6)

Continued on page 43,

• 1	2	3	4	5	6	7
<b>5. Excavation of waste water channels</b>						
i) Hired labour	1	1	1	—	2	2
fi) Family labour	—	—	—	—	—	—
<b>Total :</b>	1	1	1	—	2	2
	(—)	(—)	(—)	(—)	(—)	(—)
<b>6. Initial manuring</b>						
	57	144	125	76	129	113
	(23)	(29)	(27)	(24)	(32)	(30)
<b>7. Others</b>						
i) Hired labour	—	—	—	—	—	—
ii) Family labour	3	1	1	—	—	—
<b>Total :</b>	3	1	1	—	—	—
	(1)	(—)	(—)	(—)	(—)	(—)
<b>Total Cost of Development:</b>						
i) Hired labour	113	287	* 252	86	224	182
ii) Family labour	70	64	65	148	40	74
iii) Bullock power	9	14	13	5	15	12
iv) Initial manuring	57	144	125	76	129	113
<b>Total :</b>	249	509	455	315	408	381
	(100)	(100)	(100)	(100)	(100)	(100)

Note : Figures in brackets indicate percentages to total cost of development.

## Statement 2 : CROPPING INTENSITY

(Area in acres per cultivator)

Type of cultivators	Borrower Beneficiaries			Non-borrower beneficiaries		
	Net cropped area	Gross cropped area	Cropping intensity (Per cent)	Net cropped area	Gross cropped area	Cropping intensity (Per cent)
Small	3.61	5.58	155	1.90	3.73	196
Others	10.65	20.55	193	11.92	23.84	200
All	7.55	14.00	185	4.51	8.98	199

Note : Average size of cultivated holding of rainfed area cultivators in the groups Small, Others and All was 3.84 acres, 35.21 acres and 19.55 acres, respectively.

## Statement 3 : VALUE OF GROSS PRODUCE PER ACRE OF CROPPED AREA AND PER CULTIVATOR

(Amount in Rs)

	Borrower Beneficiaries			Non-borrower Beneficiaries			Rainfed area Cultivators		
	Small	Others	All	Small	Others	All	Small	Others	All
1. Value of gross produce per acre of net cropped area	1346	2037	1892	1977	2155	2102	129	228	217
2. Value of gross produce per acre of gross cropped area	872	1055	1020	1008	1078	1055	128	228	217
3. Value of gross produce per cultivator	4860	21698	14283	3756	25690	9480	477	6992	3736



**Statement 4 FARM RECEIPTS, COST OF CULTIVATION AND NET INCOME PER ACRE OF NET CROPPED AREA**

(Amount in Rs.)

	Borrower Beneficiaries			Non-borrower Beneficiaries			Rainfed area Cultivators		
	Small	Others	All	Small	Others	All	Small	Others	All
	1	2	3	4	5	6	7	8	9
Value of gross produce	1346	2037	1892	1977	2155	2102	129	228	217
Total cost of cultivation	608	1102	999	867	1174	1080	37	99	93
i) Variable costs	560	1015	919	766	1108	1002	30	97	90
ii) Overhead costs	48	87	80	101	66	78	7	2	3
Net farm income	738	935	893	1110	981	1022	92	129	124

Statement 5 : FARM RECEIPTS, COST OF CULTIVATION AND NET FARM INCOME PER CULTIVATOR

(Amount in Rs.)

	Borrower Beneficiaries		Non-borrower Beneficiaries			Rainfed Area		Cultivators	
	Small	Others	All	Small	Others	All	Small	Others	All
	1	2	3	4	5	6	7	8	9
1. Value of gross produce	4860	21698	14283	3756	25690	9480	477	6992	3736
2. Total cost of cultivation	2197	11749	7543	1647	13998	4870	135	3047	1552
i) Variable costs	2022	10810	6940	1455	13209	4527	108	2974	1541
ii) Overhead costs	175	939	603	192	789	348	27	73	51
3. Net farm income	2663	9949	6740	2109	11692	4610	342	3945	2144

**Statement 6 : OUTSTANDING DEBT AS ON 30 JUNE 1974**

(Amount in Rs)

Type of cultivators	Outstanding debt			Outstanding debt towards					
	Percentage of cultivators reporting	Amount per cultivator	Amount per reporting cultivator	Loans borrowed before investment		Loans borrowed after taking up investment			
				Percentage of cultivators reporting	Amount per reporting cultivator	Percentage of cultivators reporting	Amount per reporting cultivator	Amount per reporting cultivator	
	1	2	3	4	5	6	7	8	9
				<b>Borrower Beneficiaries</b>					
Small	96	2088	2180	89	839	939	52	1249	2394
Others	100	3702	3702	99	2889	2977	21	725	3421
All	98	2991	3048	95	2035	2141	35	956	2745
				<b>Non-borrower Beneficiaries</b>					
Small	70	1110	1584						
Others	44	1330	3038						
All	63	1168	1847						

Statement 7 : OUTSTANDING DEBT AS ON 30 JUNE 1974 CLASSIFIED ACCORDING TO PURPOSE

Type of cultivators	Current expenditure on farm		Capital expenditure on farm		Other purposes	
	Percentage of cultivators reporting	Debt for the purpose as percentage of total debt	Percentage of cultivators reporting	Debt for the purpose as percentage of total debt	Percentage of cultivators reporting	Debt for the purpose as percentage of total debt
Small	5	2	89	41	47	57
Others	11	11	100	80	10	9
All	8	8	95	68	27	24
			<b>Borrower</b>	<b>Beneficiaries</b>		
Small	11	7	--	--	59	93
Others	35	66	--	--	9	34
All	17	25	--	--	46	75
			<b>Non-borrower</b>	<b>Beneficiaries</b>		

Statement 8 : BORROWINGS DURING 1 JULY 1973 TO 30 JUNE 1974 CLASSIFIED ACCORDING TO SPECIFIED PURPOSES

(Amount in Rs.)

	Borrower Beneficiaries			Non-borrower Beneficiaries		
	Small	Others	All	Small	Others	All
<b>Total borrowings</b>						
Percentage of cultivators reporting	26	17	21	39	52	42
Amount per cultivator	361	375	369	321	1420	608
Amount per reporting cultivator	1406	2228	1779	831	2718	1441
<b>Of which for :</b>						
<b>1. Current expenditure on farm</b>						
Percentage of cultivators reporting	4	15	10	8	52	20
Amount per cultivator	32	330	198	80	1420	430
Amount per reporting cultivator	900	2263	2048	1000	2718	2197
<b>2. Capital expenditure on farm</b>						
Percentage of cultivators reporting	1	—	1	—	—	—
Amount per cultivator	4	—	2	—	—	—
Amount per reporting cultivator	296	—	296	—	—	—
<b>3. Other purposes</b>						
Percentage of cultivators reporting	21	3	11	28	—	21
Amount per cultivator	325	45	169	241	—	178
Amount per reporting cultivator	1564	1333	1527	866	—	866

**Statement 9 : BORROWINGS FROM CREDIT AGENCIES AS PERCENTAGE OF TOTAL BORROWINGS DURING 1 JULY 1973 TO 30 JUNE 1974.**

Type of cultivators	Co-operatives		Non-institutional agencies	
	Percentage of cultivators reporting	Percentage to total borrowings	Percentage of cultivators reporting	Percentage to total borrowings
	<b>Borrower Beneficiaries</b>			
Small	4	9	21	91
Others	10	54	7	46
All	7	35	14	65
	<b>Non-borrower Beneficiaries</b>			
Small	—	—	39	100
Others	17	43	35	57
All	5	26	38	74

**Statement 10 : NATURE AND EXTENT OF REPAYMENTS DURING 1 JULY 1973 TO 30 JUNE 1974.**

(Amount in Rs)

Type of cultivators	Repayments during the year			Repayments per cultivator towards	
	Percentage of cultivators reporting	Amount per cultivator	Amount per reporting cultivator	Old debts	Borrowings during the year
	1	2	3	4	5
	<b>Borrower Beneficiaries</b>				
Small	94	356	380	356	—
Others	85	626	732	592	34
All	89	507	569	488	19
	<b>Non-borrower Beneficiaries</b>				
Small	45	414	929	270	144
Others	37	882	2369	183	699
All	43	536	1257	247	289

**Statement 11 : INDEBTEDNESS IN RELATION TO TOTAL VALUE OF GROSS PRODUCE, VALUE OF FARM ASSETS AND VALUE OF TOTAL ASSETS, AS ON 30 JUNE 1974**

(Amount in Rs.)

Type of cultivators	Amount of outstanding debt	Value of			Debt as percentage of		
		Gross Produce	Farm assets	Total assets	Gross Produce	Farm assets	Total assets
		1	2	3	4	5	6
<b>Borrower Beneficiaries</b>							
Small	2,088	4,860	25,202	27,884	43	8	8
Others	3,702	21,698	118,750	131,244	17	3	3
All	2,991	14,283	77,553	85,727	21	4	4
<b>Non-borrower Beneficiaries</b>							
Small	1,110	3,756	16,515	18,414	30	7	6
Others	1,330	25,690	163,180	183,348	5	1	1
All	1,168	9,480	54,788	61,445	12	2	2

**Statement 12 : VALUE OF FARM, NON-FARM AND FINANCIAL ASSETS AS ON 30 JUNE 1974.**

(Amount in Rs. per cultivator)

	Farm Assets			Non-Farm Assets			Financial Assets		
	Small	Others	All	Small	Others	All	Small	Others	All
	1	2	3	4	5	6	7	8	9
<b>Value of assets acquired after development</b>	260	4804	2803	70	394	251	57	107	85
<b>Net investment (+)/Disinvestment (-) in 1973-74</b>	6	227	125	18	43	34	11	46	31
<b>Value of assets as on 30 June 1974</b>	25,202	118,750	77,553	2523	12,070	7867	159	424	307
				<b>Borrower Beneficiaries</b>					
				<b>Non-borrower Beneficiaries</b>					
<b>Value of assets acquired after development</b>	264	6777	1964	104	7162	1908	—	275	72
<b>Net investment (+)/ Disinvestment (-) in 1973-74</b>	—	410	107	70	—	52	—	39	10
<b>Value of asse's as on 30 June 1974</b>	16515	163180	54788	1899	19884	6583	—	284	74



Statement 13 : CAPITAL EXPENDITURE INCURRED ON SPECIFIED ITEMS OF ASSETS DURING 1973-74

Item of expenditure	(Amount in Rs.)											
	Percentage of cultivators reporting			Expenditure per cultivator			Expenditure per reporting cultivator					
	Small	Others	All	Small	Others	All	Small	Others	All	Small	Others	All
	1	2	3	4	5	6	7	8	9			
	<b>Borrower Beneficiaries</b>											
1. Land development	4	30	19	5	212	121	138	696	649			
2. Residential buildings	3	5	4	5	48	29	151	980	682			
3. Livestock	10	22	17	44	363	222	431	1,624	1,306			
4. Agricultural implements, machinery, etc.	43	76	61	10	266	153	22	352	250			
5. Transport equipment	1	5	3	—	3	2	15	54	47			
	<b>Non-borrower Beneficiaries</b>											
1. Land development	9	27	13	9	167	50	105	631	377			
2. Residential buildings	9	8	8	5	11	7	63	141	81			
3. Livestock	27	15	24	122	349	181	453	2,378	1,164			
4. Agricultural implements, machinery, etc.	42	82	53	15	82	32	34	101	61			
5. Transport equipment	17	—	12	9	—	7	56	—	56			