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IICA Office in Barbados  
Office of the Assistant Deputy Director General for Operations  
Investment Projects Center (CEPI)  
Project Preparation Unit IICA/IDB

Ministry of Agriculture  
and  
Natural Resources

# BARBADOS INTEGRATED LIVESTOCK PROJECT

VOLUMEN 4  
Annex Chapter II y III

Barbados  
April 1986





MINISTRY OF AGRICULTURE  
AND NATURAL RESOURCES

INTERAMERICAN INSTITUTE FOR  
COOPERATION ON AGRICULTURE

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INTEGRATED LIVESTOCK  
PROJECT

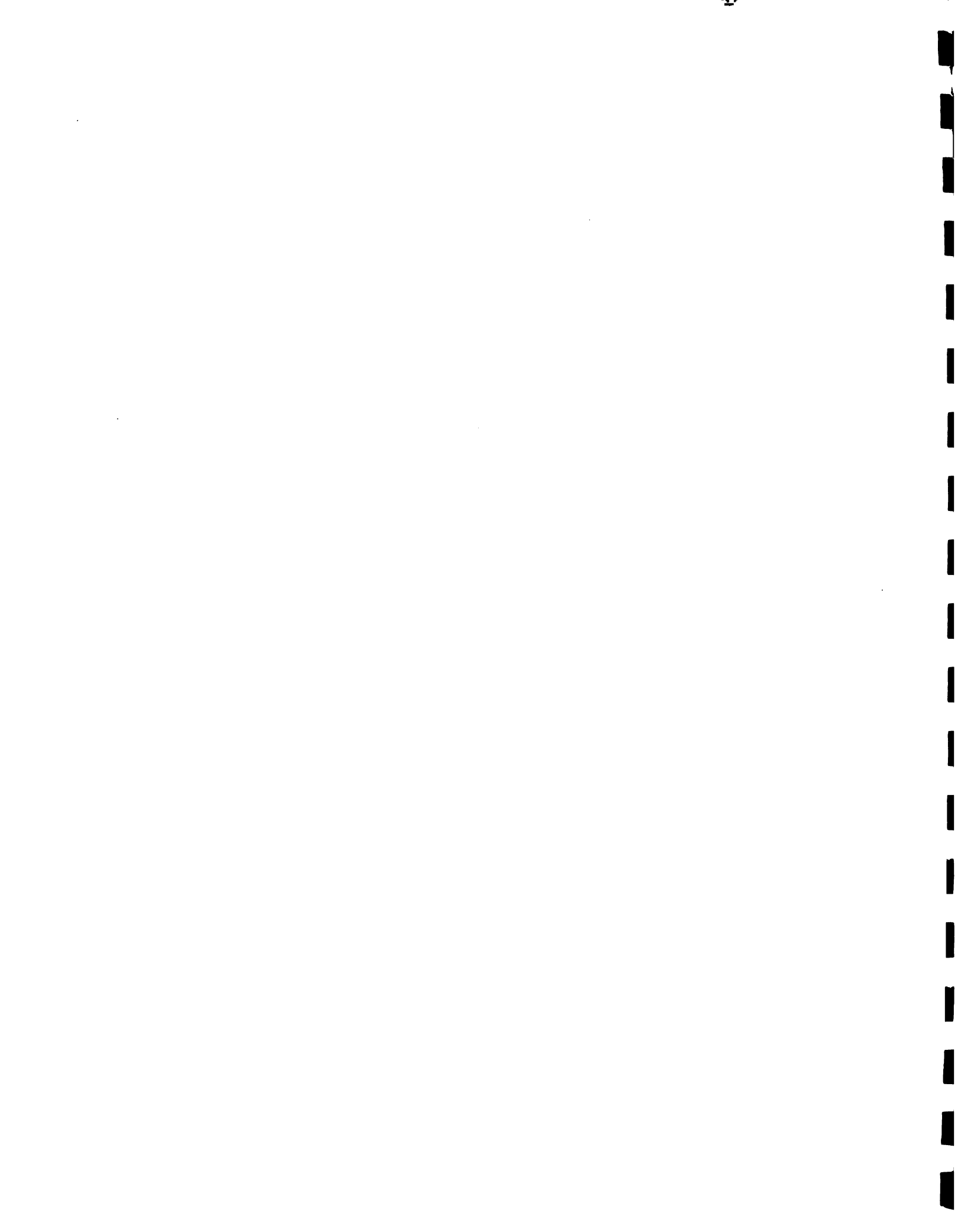
VOLUME 4  
ANNEX CHAPTER II  
ANNEX CHAPTER III

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ANNEX II-1



Report of A committee Established Within  
The Ministry of Agriculture and Natural  
Resources To Make Proposals To The Minister  
Regarding The Problem of Surplus Fresh Milk

Background

Over the period 1980 to 1984 the Pine Hill Dairy increased its intake of fresh milk from Dairy Farmers from 3,203,667 kg. to 3,753,988 kg. This represents an average annual increase of 4.31 percent over the period. Of significance however is the fact that for the period 1982 to 1983 there was an increase in milk intake of 10.24% while for the period 1983 to 1984 the increase was 13.00%. For the period January to June 1985 the increase in milk intake was of the order of 8.1%.

The Pine Hill Dairy is unable to dispose of all the milk supplied by dairy farmers in a fresh state since the supply is currently in excess of the demand. Some of the fresh milk consequently has to be utilized in the manufacture of other products such as evaporated milk.

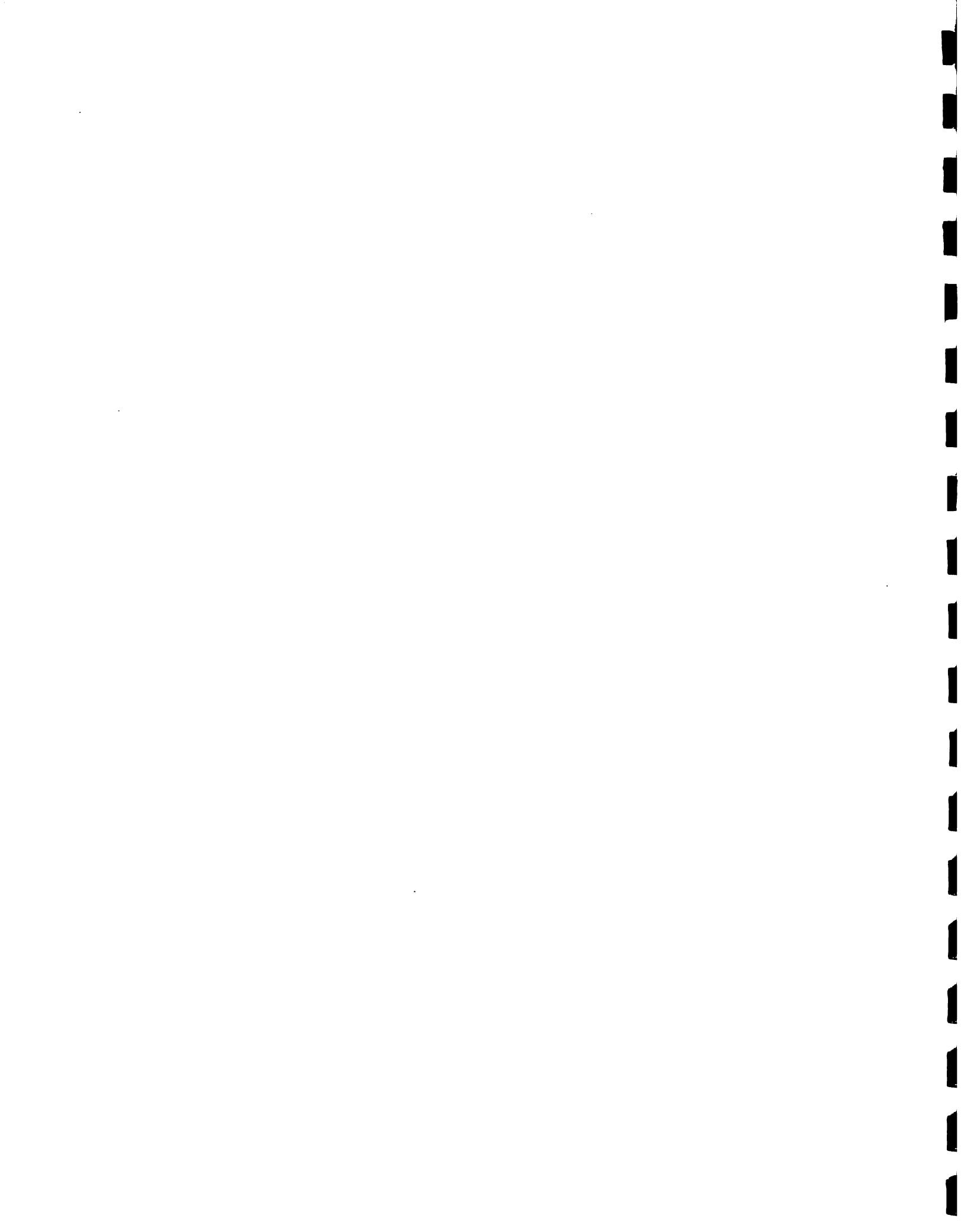
The diversion of fresh milk into manufactured milk presents a financial problem to the Dairy. The manufactured product is controlled at a price which accommodates the utilization of in-expensive powdered milk in the manufacturing process. However that price is too low to facilitate successful utilization of the higher priced fresh milk in the manufacturing process.

According to information supplied by the Pine Hill Dairy some 758,455 litres of fresh milk was diverted to the canning division during 1984. This costed the Company some \$985,992.00. As a means of improving the financial viability of the Dairy therefore it is important that the diversion of fresh milk into the canning division be minimized or even eliminated completely.

Important Considerations Regarding The Treatment  
Of The Surplus Milk Situation

There are a number of matters which must be given consideration in any proposal to deal with the surplus milk situation. The more important considerations may be listed as follows:-

- (i) The thirty-five farms supplying milk to the Dairy represent only a small proportion of the cattle farmers in Barbados even though they account for a substantial proportion of the total output of milk;
- (ii) Farmers shipping milk to the Dairy enjoy a guaranteed price as well as an assured market;





- (iii) Barbados is a high cost producer of fresh milk;
- (iv) Many Barbadian consumers have a preference for evaporated milk as against fresh milk;
- (v) Evaporated milk is cheaper than fresh milk;
- (vi) Fresh milk has a greater nutritional value than evaporated milk;
- (vii) While the utilization of imported powdered milk represents a leakage of scarce foreign exchange from the country it also helps to control the cost of living by allowing evaporated milk to be produced and sold at a much lower price;
- (viii) Efforts to achieve an expansion in the consumption of fresh milk is more likely to be successful in the long term if directed towards children rather than adults;
- (ix) Both the dairy farmers and the Pine Hill Dairy are dependent on each other and therefore need to protect each other's interest;
- (x) The Dairy Industry is still in its developmental stage. Consequently any programme for its future development must be able to accommodate new entrants, as well as readjustments or reorganization on existing farms; and
- (xi) The Pine Hill Dairy has been provided with certain incentives and privileges by the Government of Barbados and must therefore be prepared to play a key role in the development of the industry.

### Recommendations

The long term objective of the Dairy Industry should be to minimize dependence on imported raw materials as well as processed milk products. In particular the Industry should strive to reduce the need to utilize imported powdered milk in the production of evaporated or condensed milk.

It is appreciated that the present price of fresh milk at the farmgate precludes its utilization in the manufacture of evaporated milk. It is also appreciated that it would be unreasonable to expect the Pine Hill Dairy to accept milk which it cannot reasonably be expected to dispose of economically.



Some action should be taken to better facilitate the disposal of locally produced fresh milk. In this regard there are at least two alternatives which should be given consideration. These alternatives are outlined below.

Alternative A

1. As a means of helping to increase the consumption of fresh milk serious consideration should be given to its re-introduction into the primary schools. This scheme should be instituted on a pilot basis in a few schools in the first instance.
2. A small increase in the price of evaporated milk should be permitted to enable the Pine Hill Dairy to divert a greater volume of fresh milk to its canning operations without unduly affecting its viability;

Alternative B.

1. A fresh milk quota should be given to individual farmers shipping milk to the Dairy starting three years hence;
2. A study should be undertaken during the next year to determine the most appropriate basis on which to allocate individual quotas given the importance of factors such as stocking rate and level of capitalization on production efficiency.
3. The Pine Hill Dairy should be required to offer farmers a guaranteed price for milk supplied under individual quotas.
4. Farmers should be required to sign supply contracts with the Dairy;
5. A sub-committee comprising of representation from the Pine Hill Dairy, the Dairy Farmers Association and the Ministry of Agriculture should be established to advise the Minister of Agriculture on the allocation of quotas and to monitor the implementation of the quota system;
6. Once approved by the Minister of Agriculture the Dairy should be expected to comply with the quota allocation;



7.

Until such time as a full-fledge quota system can be implemented annual growth in the industry should be controlled taking into consideration to the fullest extent possible the interest of the farmer, the Dairy and the consuming public as follows:-

- (i) The Pine Hill Dairy should be required to provide an assured market and a premium price to farmers for fresh milk supplied over and above that for the preceding year provided that the increase is not in excess of the annual average for the period 1982-84. (i.e 7.26%);
- (ii) Milk supplied to the Dairy over and above the limit set at (i) above should be classified as "surplus milk" whenever it is utilized in the manufacture of evaporated or condensed milk;
- (iii) "Surplus milk" should attract a price somewhere between the present farmgate or premium price and the price of an equivalent quantity of imported powdered milk;
- ((iv) Only farmers whose individual supply of fresh milk to the Dairy exceed the controlled level should be subjected to the "surplus milk" price and then only for the proportion so classified;
- (v) All new entrants to the industry should be given an annual quota additional to the control level established as at (i) above;
- (vii) New entrants to the industry be limited to two farms per annum except in cases where the Dairy considers a greater increase feasible;
- (viii) Farmers interested in shipping milk to the Pine Hill Dairy be required to apply in Writing to the Board of Dairy.
- (ix) School children should be given every encouragement to increase their consumption of fresh milk.



The Committee was unable to reach a consensus regarding the two alternatives. On the one hand the Dairy farmers favoured Alternative A but were also of the view that:

1. They could not afford a reduction in the present farm-gate price of fresh milk;
2. They should not be required to accept a quota system until such time as imported powdered milk was no longer being utilized in the manufacture of evaporated or condensed milk by the canning division of the Pine Hill Dairy.

On the other hand the Pine Hill Dairy favoured Alternative B but was of the view that:

- (i) A quota system should be introduced one year hence if possible;
- (ii) A limit should be place on the quantum of milk which can be diverted to its canning division at a premium price in any one year and that limit should be 750 000 litres.

Experience suggest that it is unlikely that the Dairy farmers and the Pine Hill Dairy will ever agree on an approach to the "Surplus fresh milk" problem. The Ministry of Agriculture and Natural Resources will therefore have to determine the most appropriate approach to the problem.





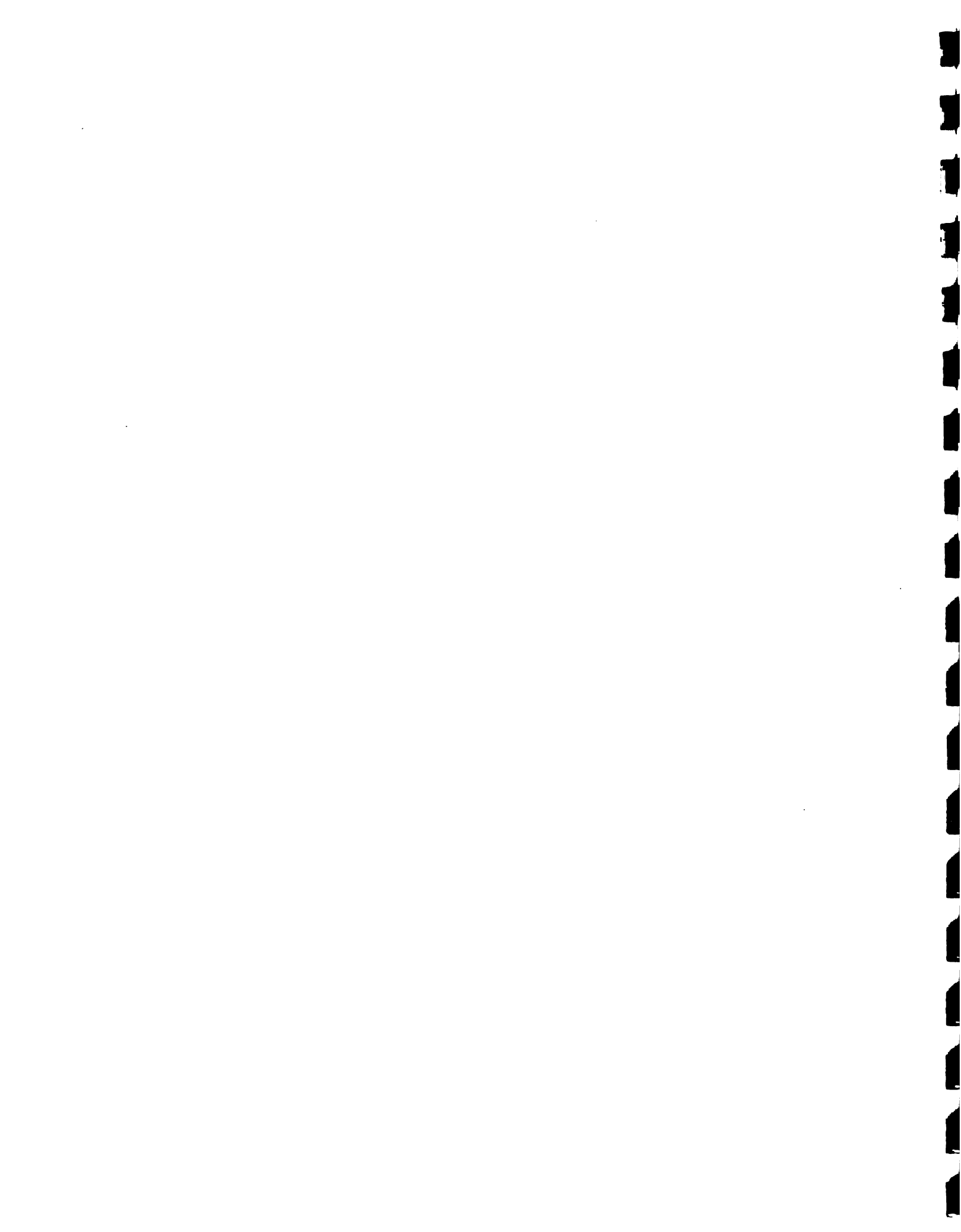
APPENDIX 1INTAKE OF MILK BY PINE HILL DAIRY 1980-84

	<u>Quantity (kg)</u>	<u>% Annual Increase/Decrease</u>
1980	3,203,667	-
1981	3,058,429	- 4.53
1982	3,013,655	- 1.46
1983	3,322,393	+10.24
1984	3,753,988	+13.00

NOTE

Average annual increase 1980-84 + 4.31%  
Average annual increase 1982-84 + 7.26%

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**ANNEX II-2**



## LIVESTOCK DEVELOPMENT FUND

### Establishment of a Livestock Development Fund

Given that there is a need to provide an appropriate credit facility for producers a Livestock Development Fund should be established. The general objective of the fund should be:

- a. To facilitate the rapid expansion of the beef cattle and sheep industries;
- b. To encourage more efficient utilization of agricultural land.

### Specific Purpose of the Fund

The fund should be used to provide loans to livestock producers for the following purposes:

- a. Purchase of cattle and sheep to be used for production of meat;
- b. Establishment of buildings for housing beef cattle and sheep;
- c. Fencing of improved pastures;
- d. Installation of watering systems for livestock;
- e. Purchase of machinery and equipment;
- f. Establishment of feed storage facilities;
- g. Any other purpose connected to livestock production as may be approved by the Minister.

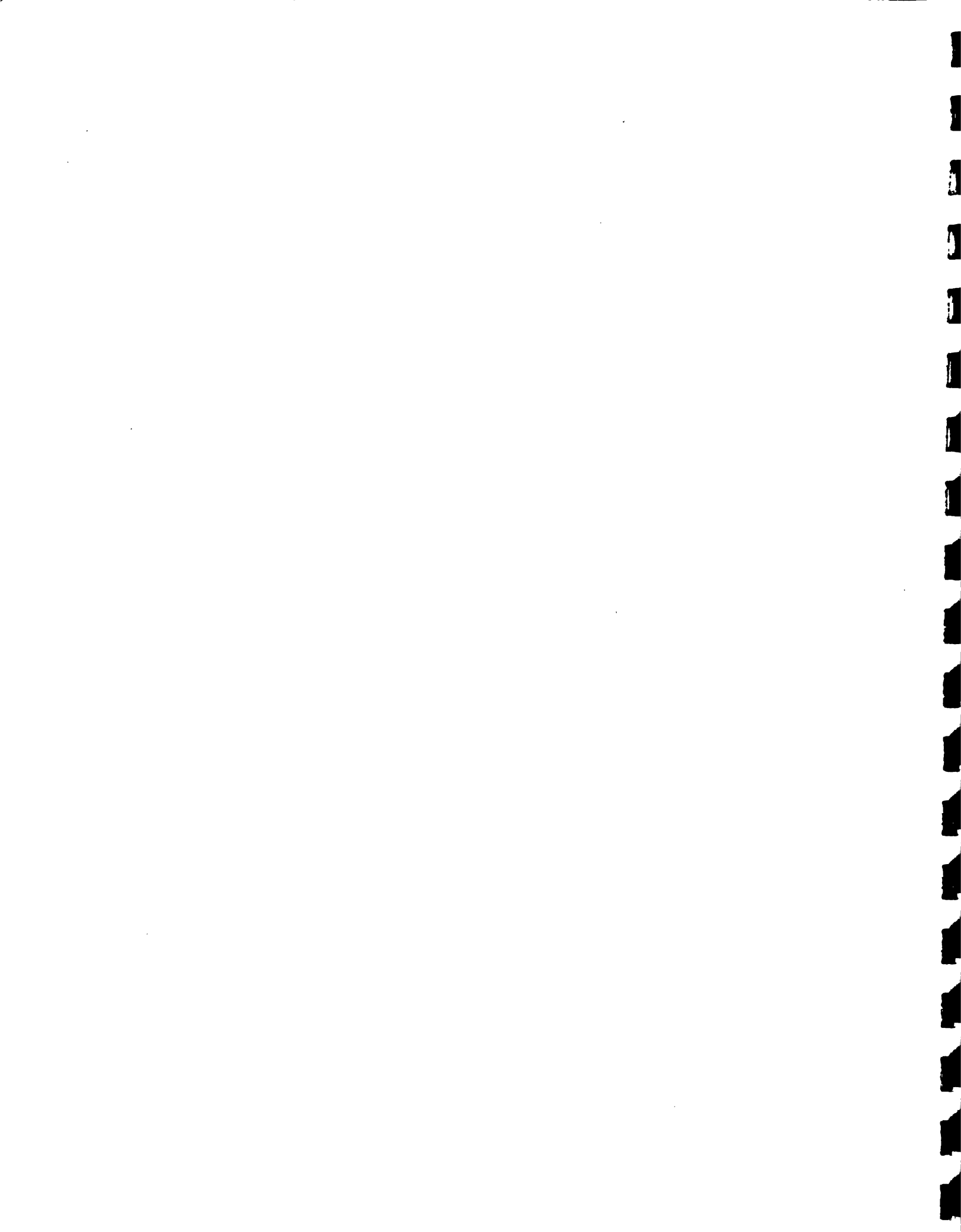
### Eligibility

All Livestock producers or potential producers should be eligible for loans.

### Application Procedure

The application procedures will be as follows:

- a. Applications for loans will have to be made to the Permanent Secretary, Ministry of Agriculture, and Natural Resources;
- b. All applications will have to be made on the special forms to be provided for the purpose;
- c. All applications will have to be accompanied by a



comprehensive farm plan.

Processing of Applications

- a. All applications will be considered by a Loans Committee;
- b. The Loans Committee having considered an application will make an appropriate recommendation for the approval of the Minister.

Composition of Loans Committee

- a. Chief Agricultural Officer
- b. Senior Accountant
- c. Senior Agricultural Officer (Livestock)
- d. Chief Economist
- e. Deputy Permanent Secretary

Conditions of Disbursement

Funds should be disbursed under the following conditions:

- a. Loans should be made available for a maximum of 10 years.
- b. Adequate security will be required for all loans.
- c. The interest rate should be 3%.
- d. All applicants will be entitled to a three (3) year moratorium if requested.
- e. The Borrower should be required to enter an agreement with the lender in respect of the repayment of the loan.

Capitalization of Fund

The Livestock Development Fund will be established with an initial subvention of Eds \$1.0 million. The required funds will be mobilized by some combination of the following means:

- a. Through a direct subvention from the Treasury.
- b. Through the imposition of a charge of 10c/per kg on all imports of fresh, chilled or frozen beef and mutton.
- c. Through a Loan from the Inter-American Development Bank or one of the other International or Regional





**Financial Institutions.****Administration of the Fund**

The fund can be managed through one of the following alternatives:

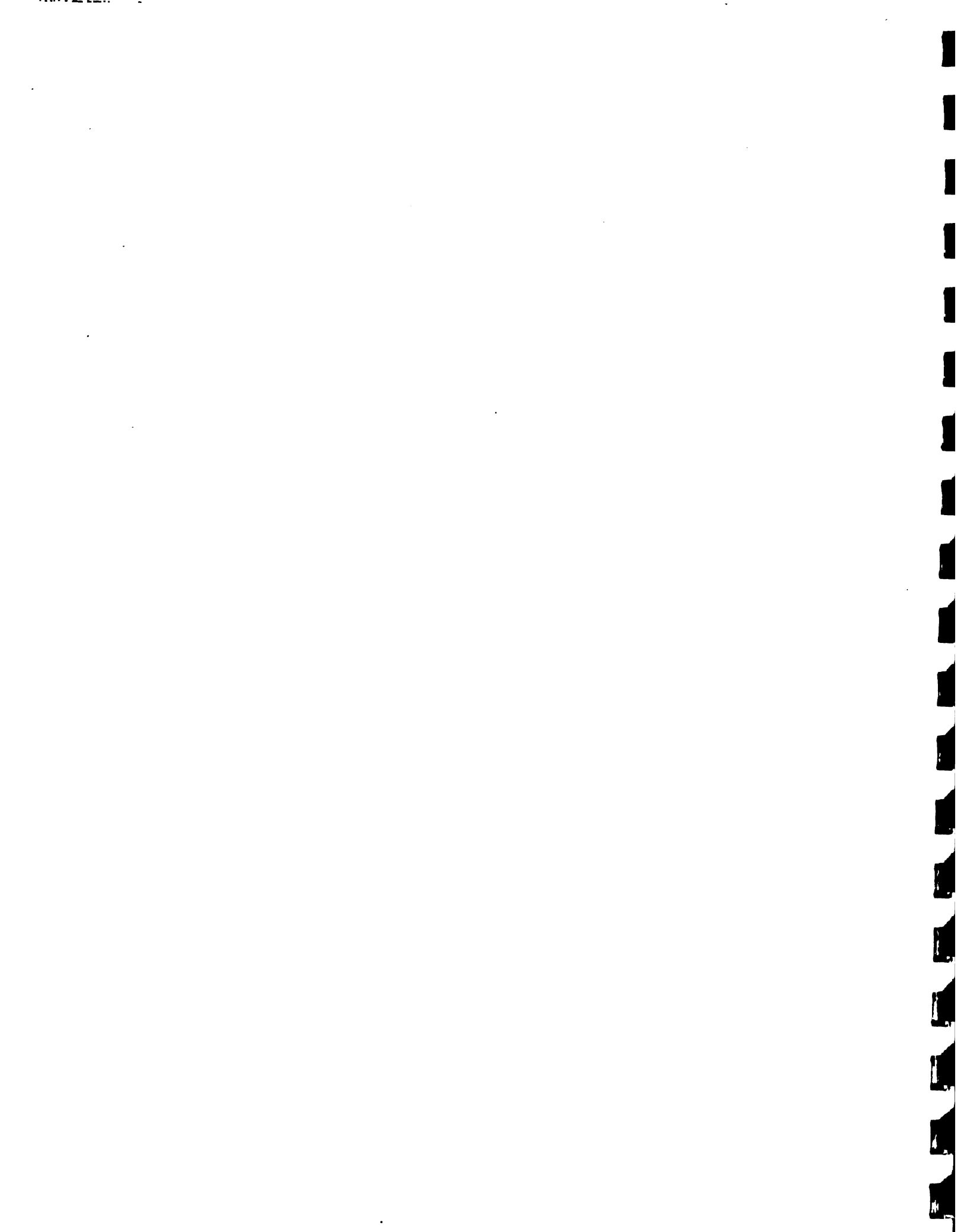
- a. The Accounts Department of the Ministry could be given responsibility for disbursement of funds as well as for the collection or receipt of repayments.
- b. Alternatively the Fund could be operated through the Agricultural Division of the Barbados National Bank where arrangements for disbursements and repayments could be made. The Ministry would however determine which applicants are entitled to loans and so advise the Bank.



ANNEX III - 1



MODEL 1



OWEN-11

ITEM	W/O PROJ.	1	2	3	4	5	6
<b>BREEDING BULLS</b>							
deaths				1	1	1	1
culls							
<b>I. BREEDING COWS</b>							
deaths	0	2	2	2	2	2	2
culls		13	13	13	13	13	13
<b>III. CALVES</b>							
birth	.72	.72	.72	.72	.72	.72	.72
deaths	.1	.1	.1	.1	.1	.1	.1
transfer female	16	16	17	17	17	17	17
transfer male							
<b>IV. HEIFERS</b>							
deaths	.05	.05	.05	.05	.05	.05	.05
transfers		15	15	15	15	15	15
sales							
<b>STEERS</b>							
deaths	.05	.05	.05	.05	.05	.05	.05
sales							

PRICES OF ANIMALS, THOUSANDS OF \$

	2.5	2.5	2.5	2.5	2.5	2.5	2.5
bulls	1.375	1.375	1.375	1.375	1.375	1.375	1.375
cows	.62	.62	.62	.62	.62	.62	.62
calves	1.625	1.625	1.625	1.625	1.625	1.625	1.625
heifers	1.733	1.733	1.733	1.733	1.733	1.733	1.733
steers							

NUMBER OF ANIMALS

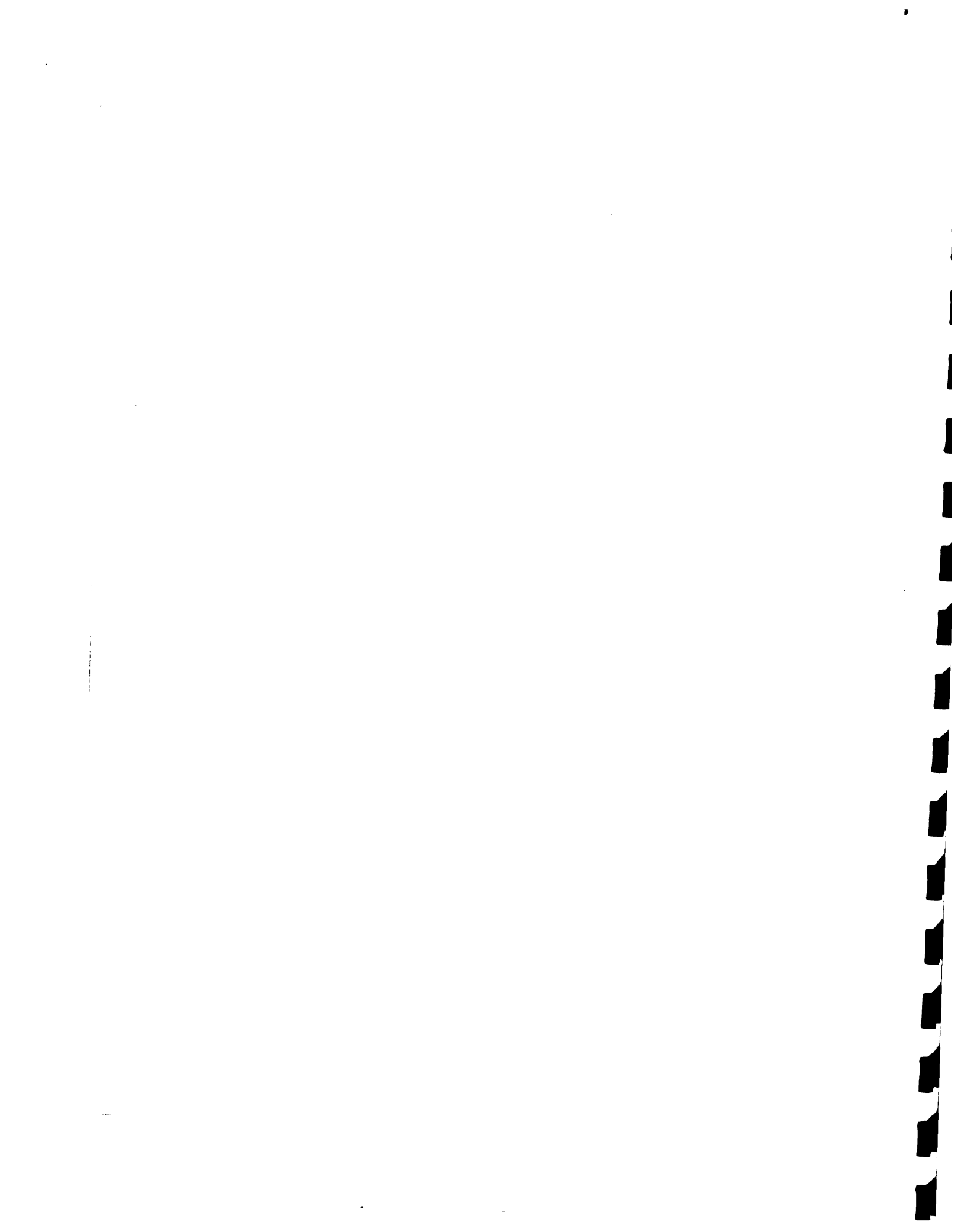
ITEM	W/O PROJ.	1	2	3	4	5	6
<b>I. BREEDING BULLS</b>							
Opening stock			4	4	4	4	4
(-) deaths	0	0	0	0	0	0	0
(-) culls	0	0	0	1	1	1	1
(+) purchases	0	4	4	4	4	4	4
Closing stock	0	4	4	4	4	4	4
<b>II. BREEDING COWS</b>							
Opening stock			100	100	100	100	100
(-) deaths	0	0	2	2	2	2	2
(-) culls	0	0	13	13	13	13	13
(+) purchases	100	100	15	15	15	15	15
(+) transfers	0	0	0	0	0	0	0
Closing stock	0	100	100	100	100	100	100
<b>III. CALVES (3 DAY)</b>							
Births	0	72	72	72	72	72	72
(-)deaths	0	7	7	7	7	7	7
(-)Transf. fee.	0	16	16	17	17	17	17
(-)Transf. sale	0	0	0	0	0	0	0
Sales	0	49	49	48	48	48	48
<b>IV. HEIFERS</b>							
Opening stock	0	0	15	15	15	15	15
(+) Transf. fee	0	16	16	17	17	17	17
(+) purchases							
(-) deaths	0	1	2	2	2	2	2
(-) transfers	0	0	15	15	15	15	15
(-) sales	0	0	0	0	0	0	0
Closing stock	0	15	15	15	15	15	15
<b>V. STEERS</b>							
Opening stock	0	0	0	0	0	0	0
(+) Transf. sale	0	0	0	0	0	0	0
(+) purchases							
(-) deaths	0	0	0	0	0	0	0
(-) sales	0	0	0	0	0	0	0
Closing stock	0	0	0	0	0	0	0

TOTAL SALES THOU.\$	0	30.256	48.131	50.011	50.011	50.011	51.
bulls	0	0	0	2.5	2.5	2.5	2.5
cows	0	0	17.875	17.875	17.875	17.875	17.
calves	0	30.256	30.256	29.636	29.636	29.636	30.
heifers	0	0	0	0	0	0	0
steers	0	0	0	0	0	0	0

	0.00	10.00	10.00	10.00	10.00	10.00	10.00
bulls	0.00	137.50	137.50	137.50	137.50	137.50	137.
cows	0.00	24.70	23.79	24.47	25.11	25.73	24.
heifers	0.00	0.00	0.00	0.00	0.00	0.00	0.00
steers	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CLOSING INVEN 0000	0.00	172.20	171.29	171.97	172.61	173.23	172.
CHANGE INVEN 0000			-0.91	0.68	0.65	0.61	

FEED, N T/YR.		1750	1750	1750	1750	1750	
PASTURE							
HAY							
SILAGE							
MOLASSES	73	73	73	73	73	73	
20% CALF STARTER	9	9	9	9	9	9	
18% BEEF FEED							
14% BEEF FEED							

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 9600  
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INVCB1

BARBADOS  
INTEGRATED LIVESTOCK PROJECT  
INVESTMENTS MODEL:1  
(BDS \$)

CONCEPT	YEAR OF DEVELOPMENT					TOTAL
	1	2	3	4	5	
I. HOUSING	20800	0	0	0	0	20800
working shed 20x30	7200					7200
machinery storage						0
shed 20x40	9600					9600
water lines	4000					4000
						0
II. HANDLING EQUIP	21000	0	0	0	0	21000
squeeze chute	6000					6000
loading chute	4000					4000
sprayer	3500					3500
fence, 1/4 acre	7500					7500
						0
						0
						0
III. MACHINERY	29000	58000	0	0	0	87000
tractor, 4whl 84hp		38000				38000
mower		3700				3700
fertilizer spreader		4300				4300
truck	29000					29000
molasses tank		6000				6000
water tank		6000				6000
						0
						0
						0
						0
IV. ANIMALS	0	532000	75000	8000	8000	373000
bulls		32000		8000	8000	48000
cows		500000	75000			575000
						0
						0
						0
V. PASTURE DEVELOP	227800	0	0	0	0	227800
prep. @710/acre	95140					95140
grass @85/acre	11390					11390
fertilizer, initial	20770					20770
6 bags/acre						0
fencing @750/acre	100500					100500
=====						
VI. TOTAL	298600	590000	75000	8000	8000	979600
=====						

SOURCE: IICA/MANR - I.L.P.



OPEXCB1

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CONCEPT

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I. LABOR  
fare agr  
fare labor-2 ea

II. FEED  
-fodder  
-molasses  
-concentrate

III. VETERINARY  
total vet. call  
for calving, ti  
fever, preg. tes  
mastitis, etc.

IV. FUEL & LUBRIC.  
V. REPAIRS & MAJ  
VI. EQUIP. RENTAL

VII. FERTILIZER  
VIII. UTILITIES  
IX. MISC'L  
X. CONTINGENCY (2  
XI. TOTAL

-----  
SOURCE: IICA/MA



CFLCB1

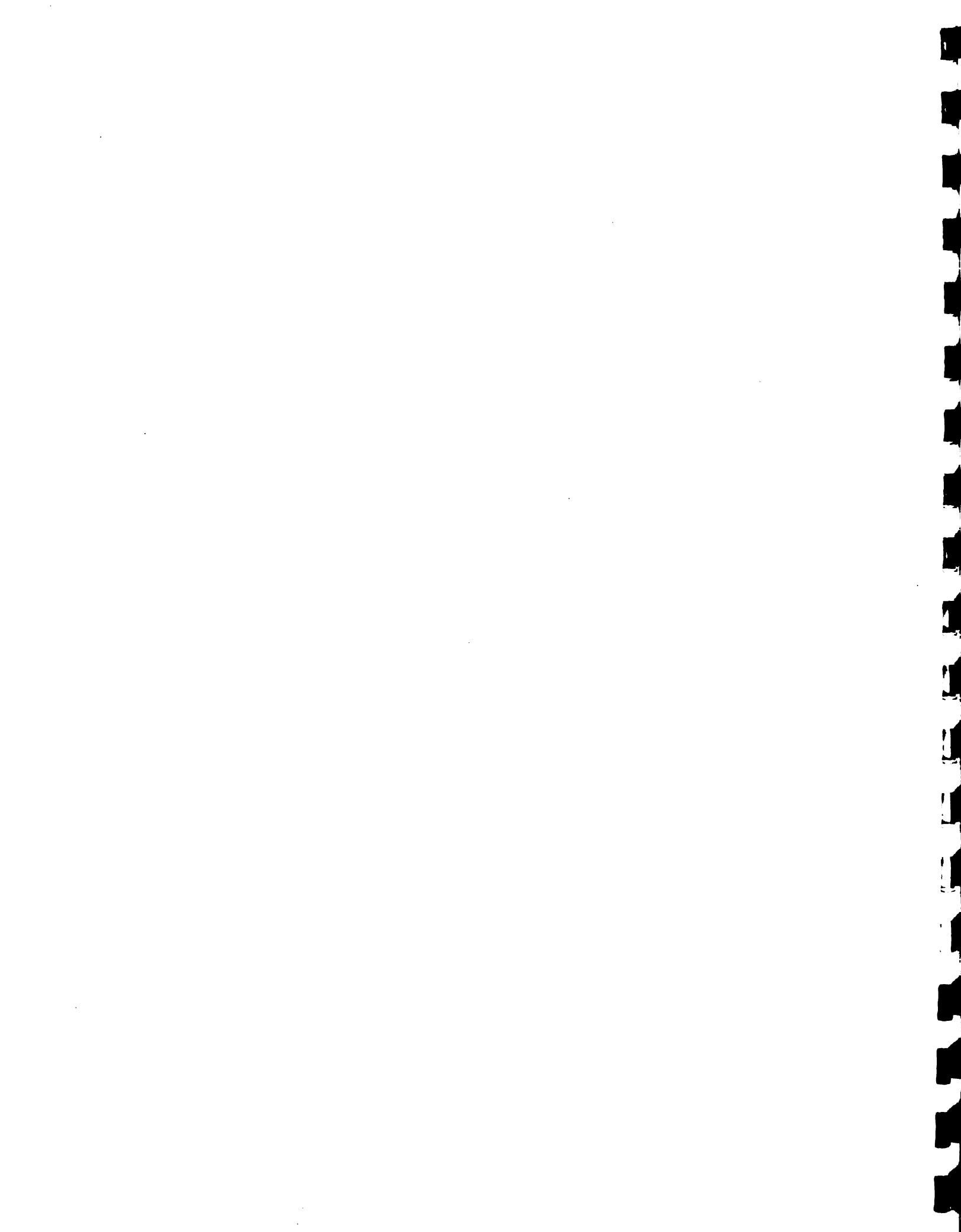
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CONCEPT	1
I. REVENUE	(
sales	
residual value	
II. INVESTMENTS & OPERATING EXPEND.	351534
pasture establish.	227804
housing	20804
handling equipment	21004
machinery & tools	29004
purchase of animal operating expend.	52934
III. NET BENEFIT BEFORE FINANCING	-351534
IV. FINANCING	(
short term loans	
long term loans	
V. DEBT SERVICE	(
short term loans	
long term loans	
VI. NET BENEFIT AFTER FINANCING	-351534

SOURCE: IICA/MANR - I.L.P.



MODEL 2





ITEM	W/O PROJ.	1	2	3	4	5	6
I. BREEDING BULLS							
deaths				1	1	1	1
culls							
II. BREEDING COWS							
deaths	0	2	2	2	2		
culls		13	13	13	13		
III. CALVES							
birth	.72	.72	.72	.72	.72		.72
deaths	.1	.1	.1	.1	.1		.1
transfer female	1	1	1	1	1		1
transfer male	1	1	1	1	1		1
IV. HEIFERS							
deaths	.05	.05	.05	.05	.05		.05
transfers		15	15	15	15		15
sales	1	1	1	1	1		1
V. STEERS							
deaths	.05	.05	.05	.05	.05		.05
sales	1	1	1	1	1		1

PRICES OF ANIMALS, THOUSANDS OF \$

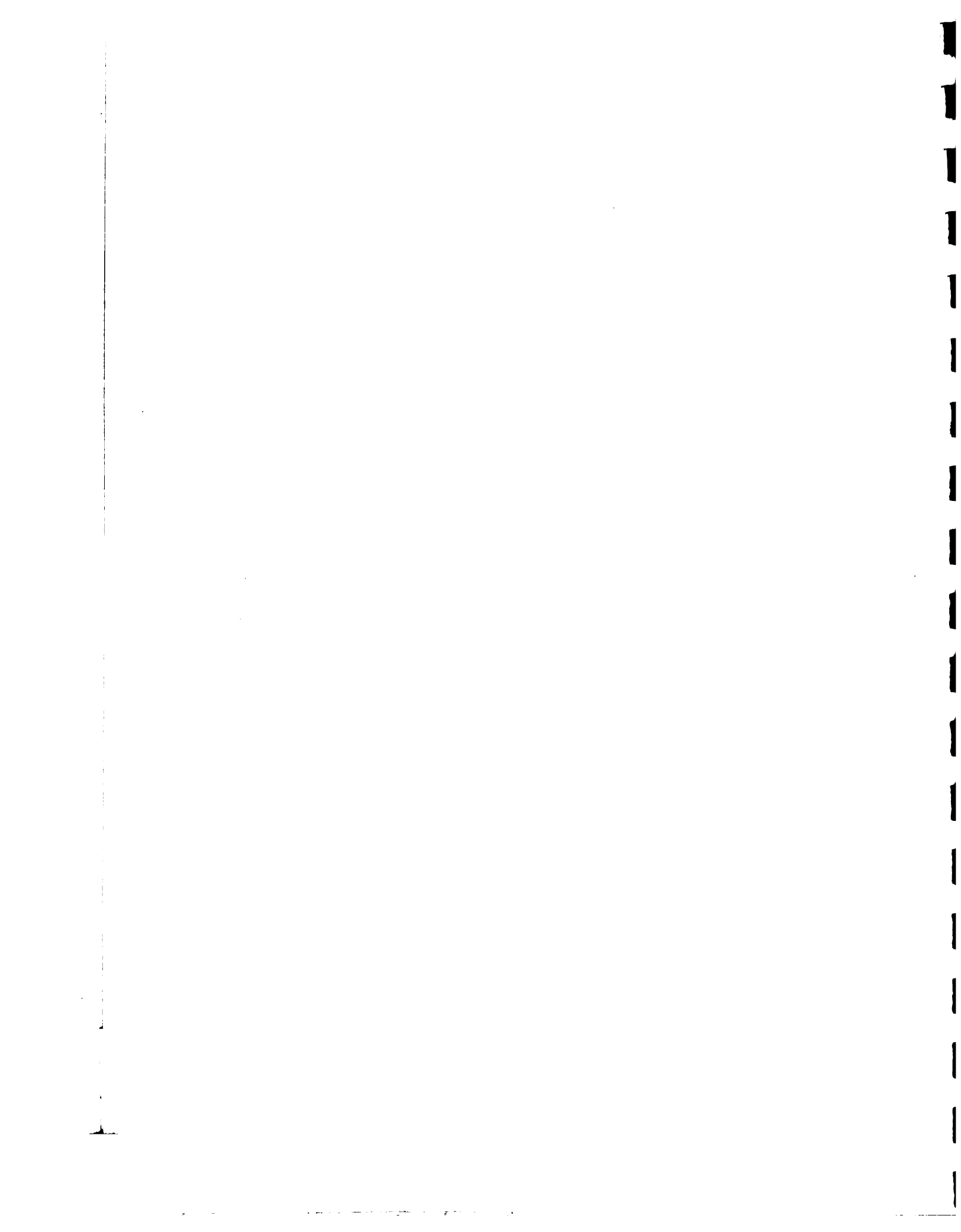
bulls	2.5	2.5	2.5	2.5	2.5	2.5	2.5
cows	1.375	1.375	1.375	1.375	1.375	1.375	1.375
calves	.78	.78	.78	.78	.78	.78	.78
heifers	1.625	1.625	1.625	1.625	1.625	1.625	1.625
steers	1.733	1.733	1.733	1.733	1.733	1.733	1.733

NUMBER OF ANIMALS

ITEM	W/O PROJ.	1	2	3	4	5	6
I. BREEDING BULLS							
Opening stock			4	4	4	4	4
(-) deaths	0	0	0	0	0	0	0
(-) culls	0	0	0	1	1	1	1
(+) purchases	0	4		1	1	1	1
Closing stock	0	4	4	4	4	4	4
II. BREEDING COWS							
Opening stock			100	100	100	100	100
(-) deaths	0	0	2	2	2	2	2
(-) culls	0	0	13	13	13	13	13
(+) purchases		100	15	0	0	0	0
(+) transfers		0	0	15	15	15	15
Closing stock	0	100	100	100	100	100	100
III. CALVES (3 DAY)							
Births	0	72	72	72	72	72	72
(-) deaths	0	7	7	7	7	7	7
(-) Transf. fee	0	32	32	32	32	32	32
(-) Transf. male	0	32	32	32	32	32	32
sales	0	0	0	0	0	0	0
IV. HEIFERS							
Opening stock	0	0	15	15	15	15	15
(+) Transf. fee	0	32	32	32	32	32	32
(+) purchases							
(-) deaths	0	2	2	2	2	2	2
(-) transfers	0	0	15	15	15	15	15
(-) sales	0	15	15	15	15	14	14
Closing stock	0	15	15	15	15	15	16
V. STEERS							
Opening stock	0	0	0	0	0	0	0
(+) Transf. male	0	32	32	32	32	32	32
(+) purchases							
(-) deaths	0	2	2	2	2	2	2
(-) sales	0	31	31	31	31	31	31
Closing stock	0	0	0	0	0	0	0

TOTAL SALES THOU.S							
bulls	0	78.98424	95.64049	98.14049	98.14049	96.51549	100.93
cows	0	0	17.875	17.875	17.875	17.875	17.875
calves	0	0	0	0	0	0	0
heifers	0	25.6425	24.42375	24.42375	24.42375	22.79875	25.731
steers	0	53.34174	53.34174	53.34174	53.34174	53.34174	54.823
PRICES PER ANIMAL							
bulls	0.00	10.00	10.00	10.00	10.00	10.00	10.00
cows	0.00	137.50	137.50	137.50	137.50	137.50	137.50
heifers	0.00	24.38	24.38	24.38	24.38	26.00	26.00
steers	0.00	0.00	0.00	0.00	0.00	0.00	0.00
LOSING INVEN 000S							
	0.00	171.88	171.88	171.88	171.88	173.50	173.50
CHANGE INVEN 000S							
			0.00	0.00	0.00	1.63	0.00
FEED, W T/YR.							
ASTURE		2271	2271	2271	2271	2271	2271
ILAGE							
OLASSES		110	110	110	110	110	110
20% CALF STARTER		9	9	9	9	9	9
18% BEEF FEED							
14% BEEF FEED							
4% BEEF FEED							
CRACKED CORN							
ASSAVA, SILAGE							

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200  
760  
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280  
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BARBADOS  
INTEGRATED LIVESTOCK PROJECT  
INVESTMENTS MODEL:2

CONCEPT	YEAR OF DEVELOPMENT					TOTAL
	1	2	3	4	5	
I. HOUSING	20800	0	0	0	0	20800
working shed 20x30	7200					7200
machinery storage						0
shed 20x40	9600					9600
water lines	4000					4000
						0
II. HANDLING EQUIP	21000	0	0	0	0	21000
squeeze chute	6000					6000
loading chute	4000					4000
sprayer	3500					3500
fence, 1/4 acre	7500					7500
inc'l.						0
concrete						0
						0
III. MACHINERY	29000	58000	0	0	0	87000
tractor, 4whl 84hp		38000				38000
mower		3700				3700
fertilizerspreader		4300				4300
truck	29000					29000
molasses tank		6000				6000
water tank		6000				6000
						0
						0
						0
						0
IV. ANIMALS	0	532000	75000	8000	8000	373000
bulls		32000		8000	8000	48000
cows		500000	75000			575000
						0
						0
						0
V. PASTURE DEVELOP	299200	0	0	0	0	299200
prep. @710/acre	124960					124960
grass @85/acre	14960					14960
fertilizer, initial	27280					27280
6 bags/acre						0
fencing @750/acre	132000					132000
VI. TOTAL	370000	590000	75000	8000	8000	1051000

SOURCE: IICA/MANR - I.L.P.



DPEXCBS

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CONCEPT

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I. LABOR

fare agr  
fare labor-2 een

II. FEED

-fodder  
-molasses  
-concentrates

III. VETERINARY EXP

total vet. calls  
for calving, tick  
fever, preg. test,  
mastitis, etc.

IV. FUEL & LUBRIC.

V. REPAIRS & MAINT.

VI. EQUIP. RENTAL

VII. FERTILIZER

VIII. UTILITIES

IX. MISC'L

X. CONTINGENCY (2%)

XI. TOTAL

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SOURCE: IICA/MANR - I.



CFLC88

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CONCEPT	1
I. REVENUE	0
sales	
residual value	
II. INVESTMENTS & OPERATING EXPEND.	422938
pasture establish.	299200
housing	20800
handling equipment	21000
machinery & tools	29000
purchase of animal	
operating expend.	52938
III. NET BENEFIT BEFORE FINANCING	-422938
IV. FINANCING	0
short term loans	
long term loans	
V. DEBT SERVICE	0
short term loans	
long term loans	
VI. NET BENEFIT AFTER FINANCING	-422938

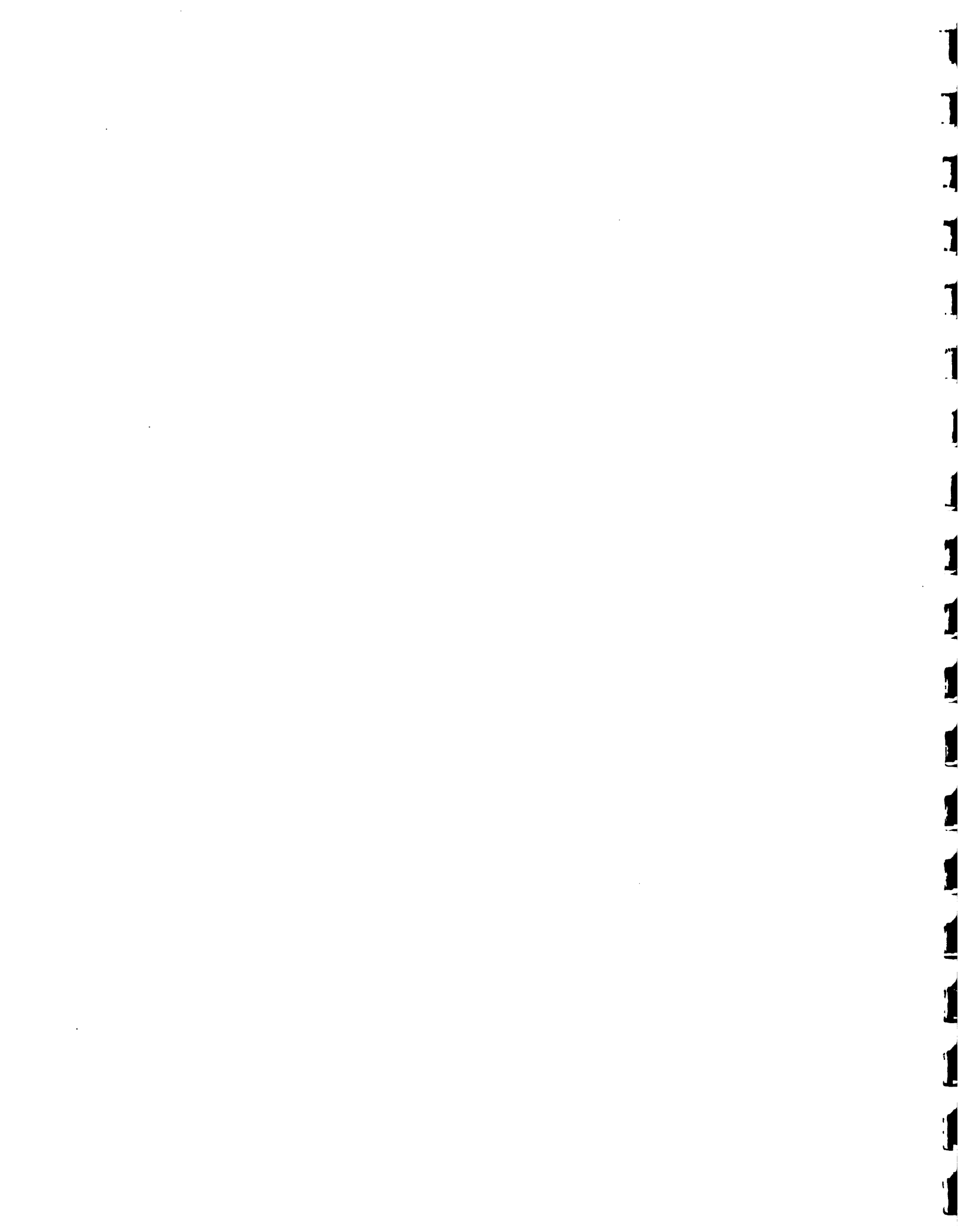
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SOURCE: IICA/MANR - I.L.P.





MODEL 3



CONNS

ITEM	W/D PROJ.	1	2	3	4	5	6
<b>I. BREEDING BULLS</b>							
deaths							
culls				1	1	1	1
<b>II. BREEDING COWS</b>							
deaths	0	2	2	2	2	2	2
culls		13	13	13	13	13	13
<b>III. CALVES</b>							
birth	.85	.85	.85	.85	.85	.85	.85
deaths	.1	.1	.1	.1	.1	.1	.1
transfer female	16	16	17	17	17	17	17
transfer male							
<b>IV. HEIFERS</b>							
deaths	.05	.05	.05	.05	.05	.05	.05
transfers		15	15	15	15	15	15
sales							
<b>V. STEERS</b>							
deaths	.05	.05	.05	.05	.05	.05	.05
sales							

PRICES OF ANIMALS, THOUSANDS OF \$

	1	2	3	4	5	6
bulls	2.5	2.5	2.5	2.5	2.5	2.5
cows	1.375	1.375	1.375	1.375	1.375	1.375
calves	.42	.42	.42	.42	.42	.42
heifers	1.625	1.625	1.625	1.625	1.625	1.625
steers	1.733	1.733	1.733	1.733	1.733	1.733

NUMBER OF ANIMALS

ITEM	W/D PROJ.	1	2	3	4	5	6
<b>I. BREEDING BULLS</b>							
Opening stock			4	4	4	4	4
(-) deaths	0	0	0	0	0	0	0
(-) culls	0	0	0	1	1	1	1
(+) purchases	0	4	4	4	4	4	4
Closing stock	0	4	4	4	4	4	4
<b>II. BREEDING COWS</b>							
Opening stock			100	100	100	100	100
(-) deaths	0	0	2	2	2	2	2
(-) culls	0	0	13	13	13	13	13
(+) purchases	0	100	15	0	0	0	0
(+) transfers	0	0	0	15	15	15	15
Closing stock	0	100	100	100	100	100	100
<b>III. CALVES (3 DAY)</b>							
Births	0	85	85	85	85	85	85
(-) deaths	0	9	9	9	9	9	9
(-) Transf. fee.	0	16	16	17	17	17	17
(-) Transf. male	0	0	0	0	0	0	0
Sales	0	61	60	60	60	60	60
<b>IV. HEIFERS</b>							
Opening stock	0	0	15	15	15	15	15
(+) Transf. fee	0	16	16	17	17	17	17
(+) purchases	0	0	0	0	0	0	0
(-) deaths	0	1	2	2	2	2	2
(-) transfers	0	0	15	15	15	15	15
(-) sales	0	0	0	0	0	0	0
Closing stock	0	15	15	15	15	15	15
<b>V. STEERS</b>							
Opening stock	0	0	0	0	0	0	0
(+) Transf. male	0	0	0	0	0	0	0
(+) purchases	0	0	0	0	0	0	0
(-) deaths	0	0	0	0	0	0	0
(-) sales	0	0	0	0	0	0	0
Closing stock	0	0	0	0	0	0	0

TOTAL SALES THOU.\$	1	2	3	4	5	6
bulls	0	37.51	55.385	57.265	57.265	57.265
cows	0	0	0	2.5	2.5	2.5
calves	0	37.51	37.51	34.89	34.89	34.89
heifers	0	0	0	0	0	0
steers	0	0	0	0	0	0

	1	2	3	4	5	6
bulls	0.00	10.00	10.00	10.00	10.00	10.00
cows	0.00	137.50	137.50	137.50	137.50	137.50
heifers	0.00	24.70	23.79	24.47	25.11	25.73
steers	0.00	0.00	0.00	0.00	0.00	0.00
CLOSING INVEN 000\$	0.00	172.20	171.97	172.61	173.23	173.4
CHANGE INVEN 000\$			-0.91	0.68	0.65	0.61

FEED, H T/YR.	1	2	3	4	5	6
PASTURE		1779	1779	1779	1779	1779
HAY						
SILAGE						
MOLASSES	75	75	75	75	75	75
20% CALF STARTER	10	10	10	10	10	10
18% BEEF FEED						
14% BEEF FEED						
36% BEEF FEED						
CRACKED CORN						

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INVCB6

BARBADOS  
INTEGRATED LIVESTOCK PROJECT  
INVESTMENTS MODEL:3

CONCEPT	YEAR OF DEVELOPMENT					TOTAL
	1	2	3	4	5	
I. HOUSING	20800	0	0	0	0	20800
working shed 20x30	7200					7200
machinery storage						0
shed 20x40	9600					9600
water lines	4000					4000
						0
II. HANDLING EQUIP	21000	0	0	0	0	21000
squeeze chute	6000					6000
loading chute	4000					4000
sprayer	3500					3500
fence, 1/4 acre	7500					7500
inc'l. 1/16 acre						0
concrete						0
						0
III. MACHINERY	29000	58000	0	0	0	87000
tractor, 4whl 84hp		38000				38000
mower		3700				3700
fertilizer spreader		4300				4300
truck	29000					29000
molasses tank		6000				6000
water tank		6000				6000
						0
						0
						0
						0
IV. ANIMALS	0	532000	75000	8000	8000	623000
bulls		32000		8000	8000	48000
cows		500000	75000			575000
						0
						0
						0
V. PASTURE DEVELOP	227800	0	0	0	0	227800
prep. @710/acre	95140					95140
grass @85/acre	11390					11390
fertilizer, initial	20770					20770
6 bags/acre						0
fencing @750/acre	100500					100500
=====	=====	=====	=====	=====	=====	=====
VI. TOTAL	298600	590000	75000	8000	8000	979600
=====	=====	=====	=====	=====	=====	=====

SOURCE: IICA/MANR - I.L.P.



OPEXCB6

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CONCEPT	1
I. LABOR	388
fare agr	180
fare labor-2 men	208
II. FEED	
-fodder	
-molasses	
-concentrates	
III. VETERINARY EXP	
total vet. calls	
for calving, tick	
fever, preg. test,	
mastitis, etc.	
IV. FUEL & LUBRIC.	75
V. REPAIRS & MAINT.	3
VI. EQUIP. RENTAL	
VII. FERTILIZER	
VIII. UTILITIES	15
IX. MISC'L	36
X. CONTINGENCY (2X)	10
XI. TOTAL	529

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SOURCE: IICA/MANR - I.L.P





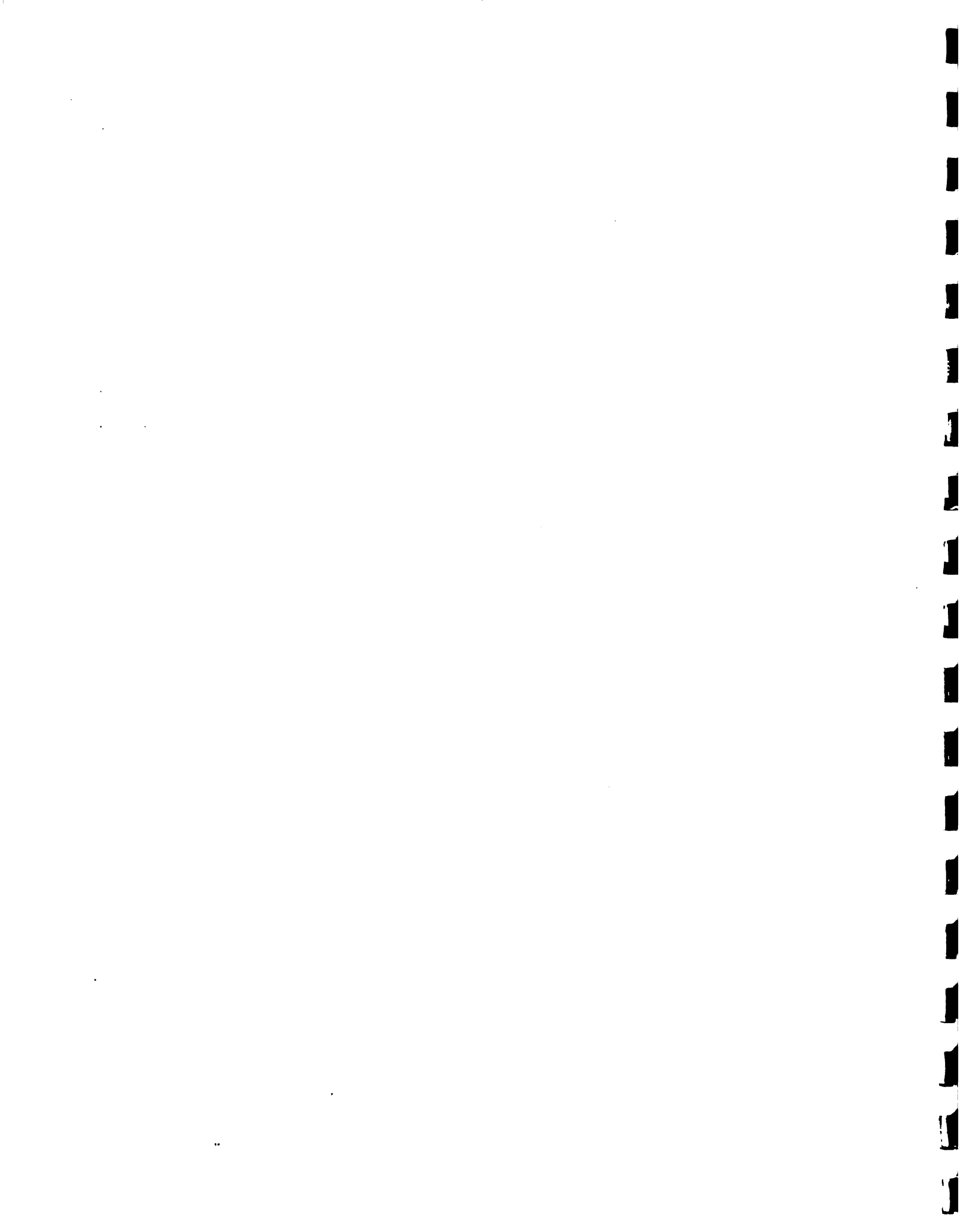
CFLCB6

CONCEPT	1
I. REVENUE	0
sales	
residual value	
II. INVESTMENTS & OPERATING EXPEND.	351538
pasture establish.	227800
housing	20800
handling equipment	21000
machinery & tools	29000
purchase of animal	
operating expend.	52938
III. NET BENEFIT BEFORE FINANCING	-351538
IV. FINANCING	0
short term loans	
long term loans	
V. DEBT SERVICE	0
short term loans	
long term loans	
VI. NET BENEFIT AFTER FINANCING	-351538

SOURCE: IICA/MANR - I.L.P.



MODEL 4



CONDNS

ITEM	N/D PROJ.	1	2	3	4	5
<b>I. BREEDING BULLS</b>						
deaths						
culls						
<b>II. BREEDING COWS</b>						
deaths	0	1	1	1	1	1
culls		4	4	4	4	4
<b>III. CALVES</b>						
birth	.72	.72	.72	.72	.72	.72
deaths	.1	.1	.1	.1	.1	.1
transfer female	.6	.6	.6	.6	.6	.6
transfer male						
<b>IV. HEIFERS</b>						
deaths	.05	.05	.05	.05	.05	.05
transfers		5	5	5	5	5
sales						
<b>V. STEERS</b>						
deaths	.05	.05	.05	.05	.05	.05
sales						

PRICES OF ANIMALS, THOUSANDS OF

bulls	2.5	2.5	2.5	2.5	2.5
cows	1.375	1.375	1.375	1.375	1.375
calves	.62	.62	.62	.62	.62
heifers	1.625	1.625	1.625	1.625	1.625
steers	1.733	1.733	1.733	1.733	1.733

NUMBER OF ANIMALS

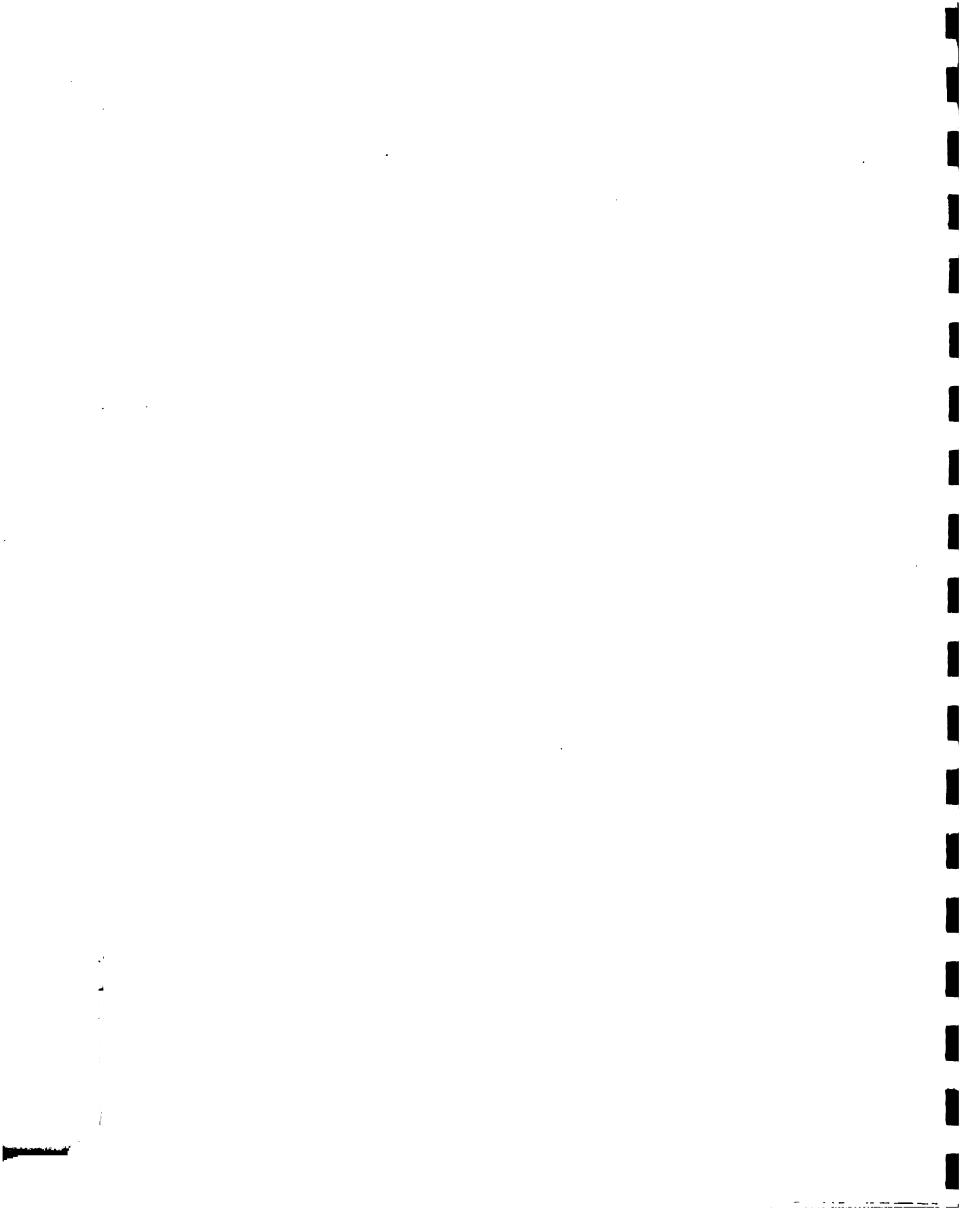
ITEM	N/D PROJ.	1	2	3	4	5
<b>I. BREEDING BULLS</b>						
Opening stock			0	0	0	0
(-) deaths	0	0	0	0	0	0
(-) culls	0	0	0	0	0	0
(+) purchases	0	0	0	0	0	0
Closing stock	0	0	0	0	0	0
<b>II. BREEDING COWS</b>						
Opening stock			25	25	25	25
(-) deaths	0	0	1	1	1	1
(-) culls	0	0	4	4	4	4
(+) purchases		25	5	0	0	0
(+) transfers		0	0	5	5	5
Closing stock	0	25	25	25	25	25
<b>III. CALVES (3 DAY)</b>						
Births	0	18	18	18	18	18
(-)deaths	0	2	2	2	2	2
(-)Transf. fee.	0	4	4	4	4	4
(-)Transf. sale	0	0	0	0	0	0
Sales	0	10	10	11	10	10
<b>IV. HEIFERS</b>						
Opening stock	0	0	4	4	4	4
(+) Transf. fee	0	4	4	5	4	4
(+) purchases						
(-) deaths	0	0	1	1	1	1
(-) transfers	0	0	5	5	5	5
(-) sales	0	0	0	0	0	0
Closing stock	0	4	4	4	4	4
<b>V. STEERS</b>						
Opening stock	0	0	0	0	0	0
(+) transf. sale	0	0	0	0	0	0
(+) purchases						
(-) deaths	0	0	0	0	0	0
(-) sales	0	0	0	0	0	0
Closing stock	0	0	0	0	0	0

<b>TOTAL SALES THOU. \$</b>	0	6.324	11.824	12.444	11.824	11.824
bulls	0	0	0	0	0	0
cows	0	0	5.5	5.5	5.5	5.5
calves	0	6.324	6.324	6.944	6.324	6.324
heifers	0	0	0	0	0	0
steers	0	0	0	0	0	0

bulls	0.00	0.00	0.00	0.00	0.00	0.00
cows	0.00	34.38	34.38	34.38	34.38	34.38
heifers	0.00	9.24	9.94	9.03	9.72	10.37
steers	0.00	0.00	0.00	0.00	0.00	0.00
<b>CLOSING INVEN 0000</b>	0.00	43.64	44.31	43.41	44.09	44.75
<b>CHANGE INVEN 0000</b>			0.67	-0.90	0.69	0.65

<b>FEED, M T/YR.</b>						
PASTURE		438	438	438	438	438
HAY						
BILAGE						
MOLASSES		19	19	19	19	19
20% CALF STARTER		2	2	2	2	2
18% BEEF FEED						
14% BEEF FEED						
36% BEEF FEED						

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8250  
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3500  
750  
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2900  
26270  
3145  
5735  
0  
27750  
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53850  
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INVCB4

BARBADOS  
 INTEGRATED LIVESTOCK PROJECT  
 INVESTMENTS MODEL:4

CONCEPT	YEAR OF DEVELOPMENT					TOTAL
	1	2	3	4	5	
I. HOUSING	8700	0	0	0	0	8700
working shed 20x30	7200					7200
						0
						0
water lines	1500					1500
						0
II. HANDLING EQUIP	8250	0	0	0	0	8250
						0
loading chute	4000					4000
sprayer	3500					3500
fence, 1/4acre	750					750
						0
						0
						0
III. MACHINERY	18000	6000	0	0	0	24000
						0
						0
						0
truck	18000					18000
molasses tank		6000				6000
						0
						0
						0
						0
						0
IV. ANIMALS	0	125000	25000	0	0	150000
cows		125000	25000			150000
						0
						0
						0
V. PASTURE DEVELOP	62900	0	0	0	0	62900
prep. @710/acre	26270					26270
grass @85/acre	3145					3145
fertilizer, initial	5735					5735
6 bags/acre						0
fencing @750/acre	27750					27750
=====						
VI. TOTAL	97850	131000	25000	0	0	253850
=====						

SOURCE: IICA/MANR - I.L.P.





U  
OPEXCBS

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CONCEPT 1

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I. LABOR

II. FEED

- fodder
- molasses
- concentrates

III. VETERINARY EXP

total vet. calls  
for calving, tick  
fever, preg. test, A.I.  
mastitis, etc.

IV. FUEL & LUBRIC. 29

V. REPAIRS & MAINT. 9

VI. EQUIP. RENTAL

mowing & fertil.  
trucking cattle

VII. FERTILIZER

VIII. UTILITIES 15

IX. MISC'L 9

X. CONTINGENCY (2%) 11

XI. TOTAL 59

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SOURCE: IICA/MANR - I.L.P



CFLC83

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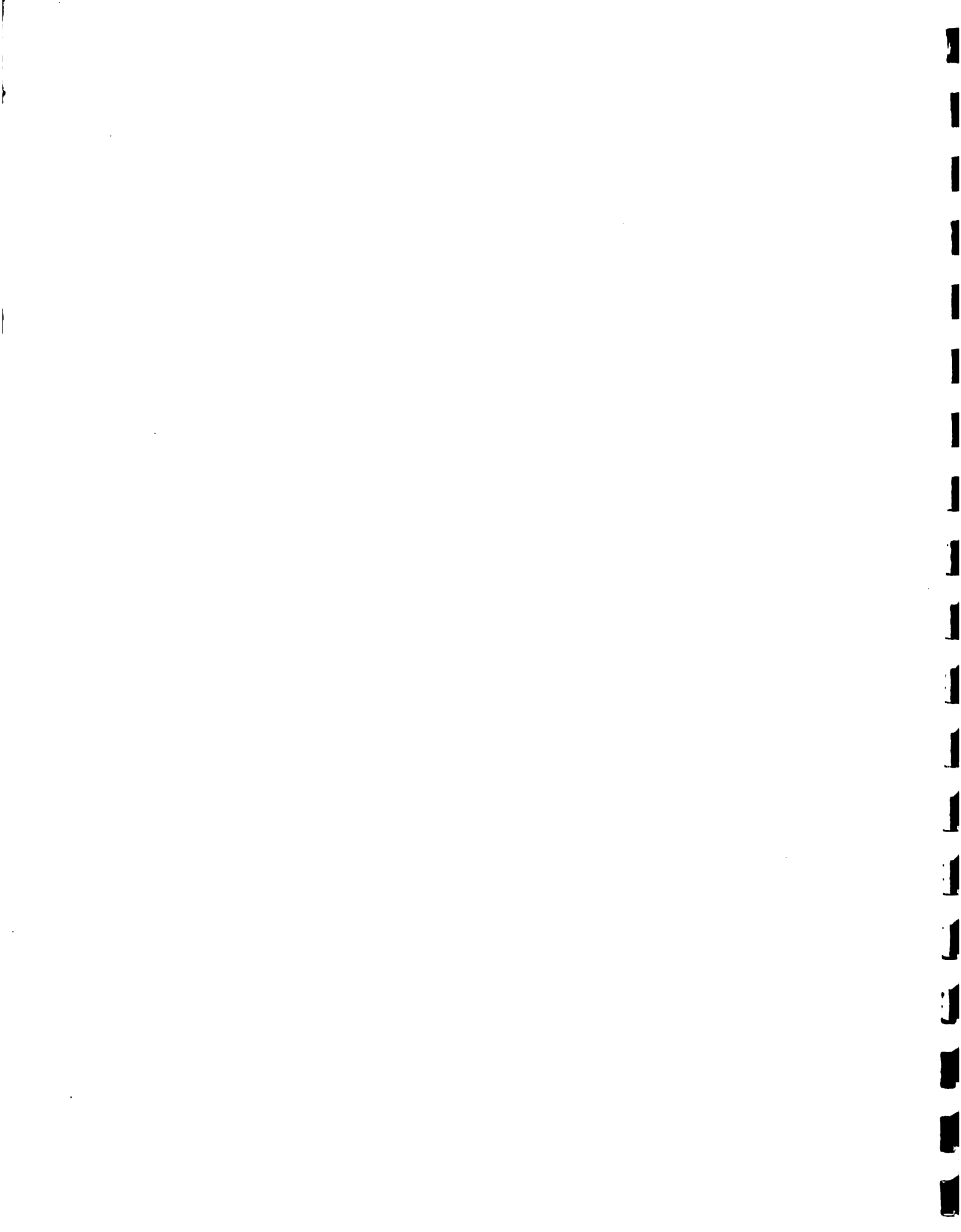
CONCEPT	1
I. REVENUE	
sales	
residual value	
II. INVESTMENTS & OPERATING EXPEND.	10335
pasture establish.	6290
housing	870
handling equipment	825
machinery & tools	1800
purchase of animal operating expend.	550
III. NET BENEFIT BEFORE FINANCING	-10335
IV. FINANCING	
short term loans	
long term loans	
V. DEBT SERVICE	
short term loans	
long term loans	
VI. NET BENEFIT AFTER FINANCING	-10335

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SOURCE: IICA/MANR - I.L.P.



MODEL 5









INVCBS

BARBADOS  
INTEGRATED LIVESTOCK PROJECT  
INVESTMENTS MODEL:5

CONCEPT	YEAR OF DEVELOPMENT					TOTAL
	1	2	3	4	5	
I. HOUSING	2400	0	0	0	0	2400
working shed 10x20	2400					2400
						0
						0
						0
						0
II. HANDLING EQUIP	300	0	0	0	0	300
SPRAYER	300					300
						0
						0
						0
						0
III. MACHINERY	18000	0	0	0	0	18000
						0
						0
truck	18000					18000
						0
						0
						0
						0
IV. ANIMALS	0	50000	15000	0	0	65000
						0
cows		50000	15000			65000
						0
						0
V. PASTURE DEVELOP	23800	0	0	0	0	23800
prep. @710/acre	9940					9940
grass @85/acre	1190					1190
fertilizer, initial	2170					2170
6 bags/acre						0
fencing @750/acre	10500					10500
=====						
VI. TOTAL	44500	50000	15000	0	0	109500
=====						

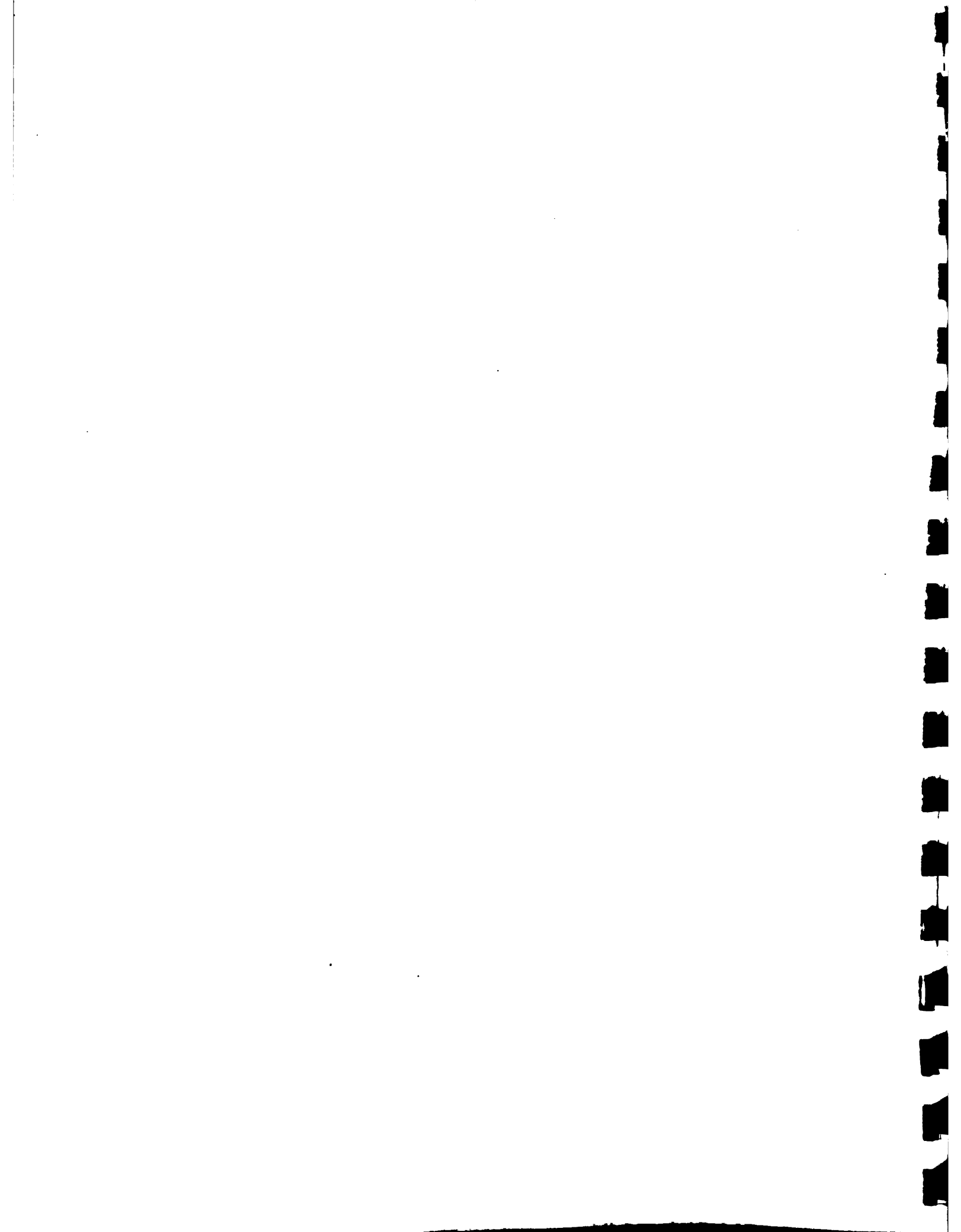
SOURCE: IICA/MANR - I.L.P.



OPEXC84

CONCEPT	1	2
I. LABOR	0	0
fare mgr		
fare labor-2 men		
II. FEED	0	
-fodder		
-molasses		
-concentrates		
III. VETERINARY EXP	0	
total vet. calls		
for calving, tick		
fever, prag. test,		
mastitis, etc.		
IV. FUEL & LUBRIC.		
V. REPAIRS & MAINT.	100	
VI. EQUIP. RENTAL	0	
VII. FERTILIZER		
VIII. UTILITIES	360	
IX. MISC'L	500	
X. CONTINGENCY (2%)	19	
XI. TOTAL	979	

SOURCE: IICA/MANR - I.L.P.



CFLC84

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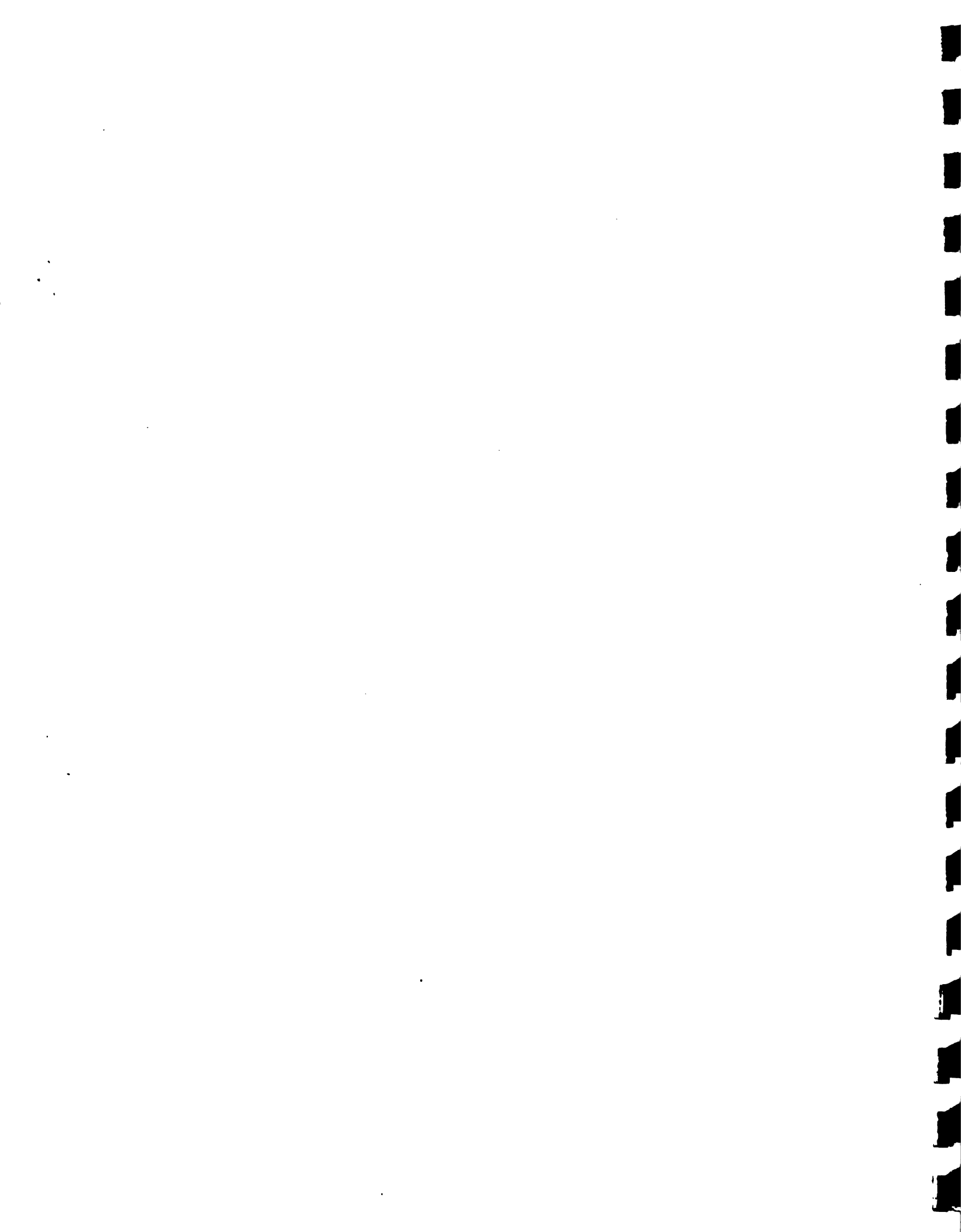
CONCEPT	1
I. REVENUE	0
sales	
residual value	
II. INVESTMENTS & OPERATING EXPEND.	45479
pasture establish.	23800
housing	2400
handling equipment	300
machinery & tools	18000
purchase of animal	
operating expend.	979
III. NET BENEFIT BEFORE FINANCING	-45479
IV. FINANCING	0
short term loans	
long term loans	
V. DEBT SERVICE	0
short term loans	
long term loans	
VI. NET BENEFIT AFTER FINANCING	-45479

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SOURCE: IICA/MANR - I.L.P.



MODEL 6





FEEDL2

ITEM	W/O PROJ.	1	2	3	4	5	6	7
<b>I. BREEDING BULLS</b>								
deaths								
<b>II. BREEDING COWS</b>								
deaths								
<b>III. CALVES</b>								
birth								
deaths								
transfer female								
transfer male								
<b>IV. HEIFERS</b>								
deaths		.05	.05	.05	.05	.05	.05	.05
transfers								
sales		0	.5	1	.5	1	.5	1
<b>V. STEERS</b>								
deaths		.05	.05	.05	.05	.05	.05	.05
sales		0	.5	1	.5	1	.5	1

PRICES OF ANIMALS, THOUSANDS

		1	2	3	4	5	6	7
bulls		2.5	2.5	2.5	2.5	2.5	2.5	2.5
cows		1.375	1.375	1.375	1.375	1.375	1.375	1.375
calves		.78	.78	.78	.78	.78	.78	.78
heifers		1.625	1.625	1.625	1.625	1.625	1.625	1.625
steers		1.733	1.733	1.733	1.733	1.733	1.733	1.733

NUMBER OF ANIMALS

ITEM	W/O PROJ.	1	2	3	4	5	6	7
<b>I. BREEDING BULLS</b>								
Opening stock			0	0	0	0	0	0
(-) deaths	0	0	0	0	0	0	0	0
(-) culls	0	0	0	0	0	0	0	0
(+) purchases	0	0	0	0	0	0	0	0
Closing stock	0	0	0	0	0	0	0	0
<b>II. BREEDING COWS</b>								
Opening stock			0	0	0	0	0	0
(-) deaths	0	0	0	0	0	0	0	0
(-) culls	0	0	0	0	0	0	0	0
(+) purchases	0	0	0	0	0	0	0	0
(+) transfers	0	0	0	0	0	0	0	0
Closing stock	0	0	0	0	0	0	0	0
<b>III. CALVES (3 DAY)</b>								
Births	0	0	0	0	0	0	0	0
(-) deaths	0	0	0	0	0	0	0	0
(-) Transf. fee.	0	0	0	0	0	0	0	0
(-) Transf. male	0	0	0	0	0	0	0	0
sales	0	0	0	0	0	0	0	0
<b>IV. HEIFERS</b>								
Opening stock	0	0	0	24	0	24	0	24
(+) Transf. fee	0	0	0	0	0	0	0	0
(+) purchases	0	0	30	25	30	25	30	25
(-) deaths	0	0	3	2	3	2	3	2
(-) transfers	0	0	0	0	0	0	0	0
(-) sales	0	0	24	44	24	44	24	44
Closing stock	0	0	24	0	24	0	24	0
<b>V. STEERS</b>								
Opening stock	0	0	0	71	0	71	0	71
(+) Transf. male	0	0	0	0	0	0	0	0
(+) purchases	0	0	150	75	150	75	150	75
(-) deaths	0	0	8	7	8	7	8	7
(-) sales	0	0	71	139	71	139	71	139
Closing stock	0	0	71	0	71	0	71	0

<b>TOTAL SALES THOU.S</b>	0	0	162.07	316.0365	162.07	316.0365	162.07	316.0365
bulls	0	0	0	0	0	0	0	0
cows	0	0	0	0	0	0	0	0
calves	0	0	0	0	0	0	0	0
heifers	0	0	38.59375	75.25781	38.59375	75.25781	38.59375	75.25781
steers	0	0	123.4763	240.7787	123.4763	240.7787	123.4763	240.7787
bulls	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cows	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
heifers	0.00	0.00	38.59	0.00	38.59	0.00	38.59	0.00
steers	0.00	0.00	123.48	0.00	123.48	0.00	123.48	0.00
CLOSING INVEN 000S	0.00	0.00	162.07	0.00	162.07	0.00	162.07	0.00
CHANGE INVEN 000S			162.07	-162.07	162.07	-162.07	162.07	-162.07

FEED, M T/YR.

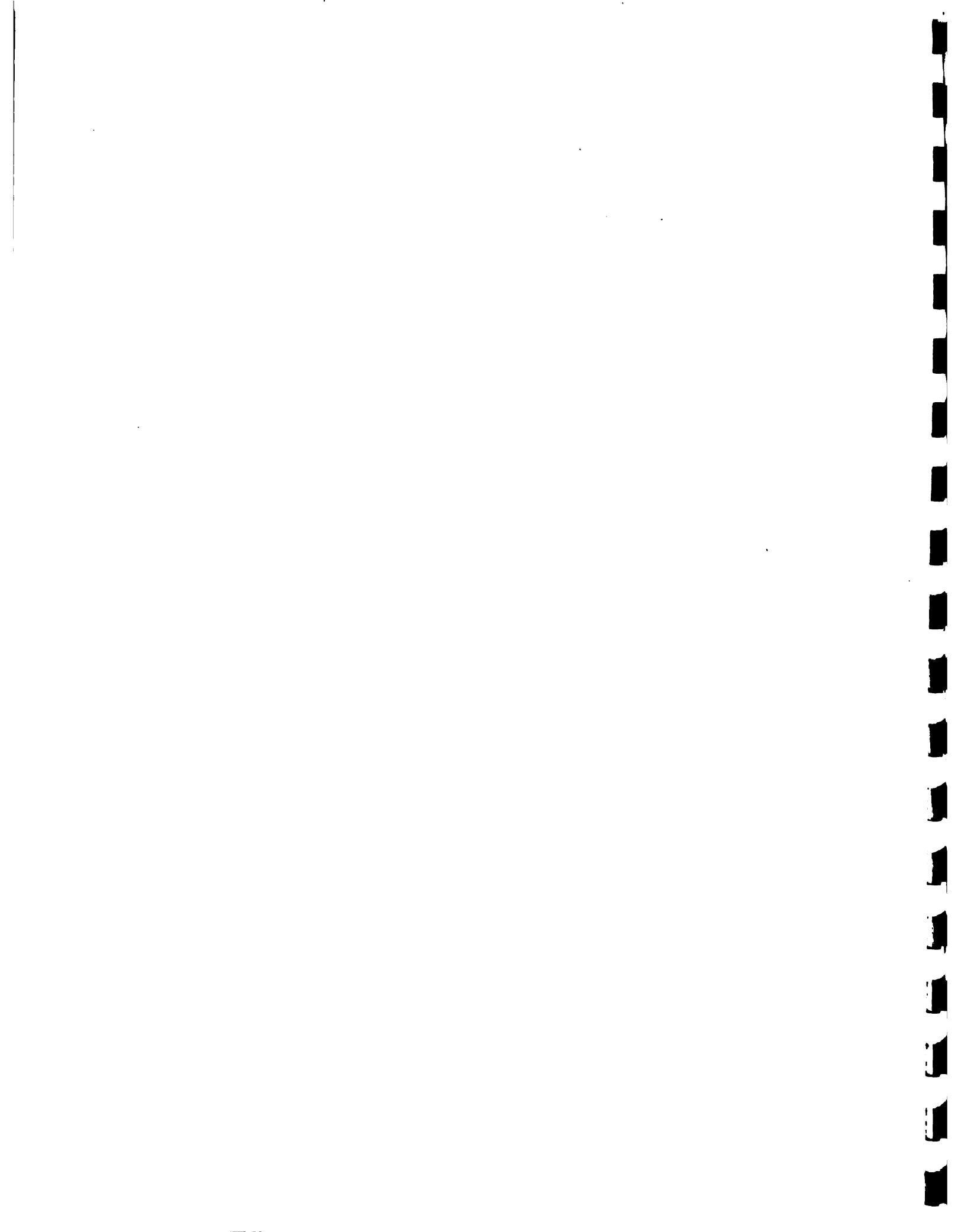


INVFL2

BARBADOS  
INTEGRATED LIVESTOCK PROJECT  
INVESTMENTS MODEL:6  
(BDS \$)

CONCEPT	YEAR OF DEVELOPMENT					TOTAL
	1	2	3	4	5	
I. HOUSING	22100	0	0	0	0	22100
feed bunk 64'cover	9500					9500
mounds(marl)	5000					5000
water lines&tanks	2600					2600
silo	5000					5000
II. HANDLING EQUIP	23500	0	0	0	0	23500
squeeze chute	6000					6000
loading chute	4000					4000
sprayer	3500					3500
sick&handling pen	7500					7500
inc'l. 1/16 acre						0
concrete						0
fencing	2500					2500
III. MACHINERY	0	39000	0	0	0	39000
forage harvester		10000				10000
mower		3700				3700
fertilizerspreader		4300				4300
forage wagons-2		15000				15000
molasses tank		6000				6000
						0
						0
						0
						0
IV. ANIMALS	0	248000	124000	248000	124000	744000
HEIFERS		62000	31000	62000	31000	186000
STEERS		186000	93000	186000	93000	558000
						0
						0
						0
V. FORAGE DEVELOP.	14250	0	0	0	0	14250
prep. @710/acre	10650					10650
grass @85/acre	1275					1275
fertilizer, initial	2325					2325
6 bags/acre						0
						0
VI. TOTAL	59850	287000	124000	248000	124000	842850

SOURCE: IICA/MANR - I.L.P.



OPEXFL2

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CONCEPT	
I. LABOR	127
fara agr 1/10 time	16
fara labor - 1 man	104
II. FEED	
-fodder	
-molasses	
-concentrates	
III. VETERINARY EXP	
total vet. calls	
for calving, tick	
fever, preg. test,	
mastitis, etc.	
IV. FUEL & LUBRIC.	31
V. REPAIRS & MAINT.	1
VI. EQUIP. RENTAL	
VII. FERTILIZER	
VIII. UTILITIES	14
IX. MISC'L	21
X. CONTINGENCY (2%)	3
XI. TOTAL	202

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SOURCE: IICA/MANR - I.L.8



CFLFL2

CONCEPT

1

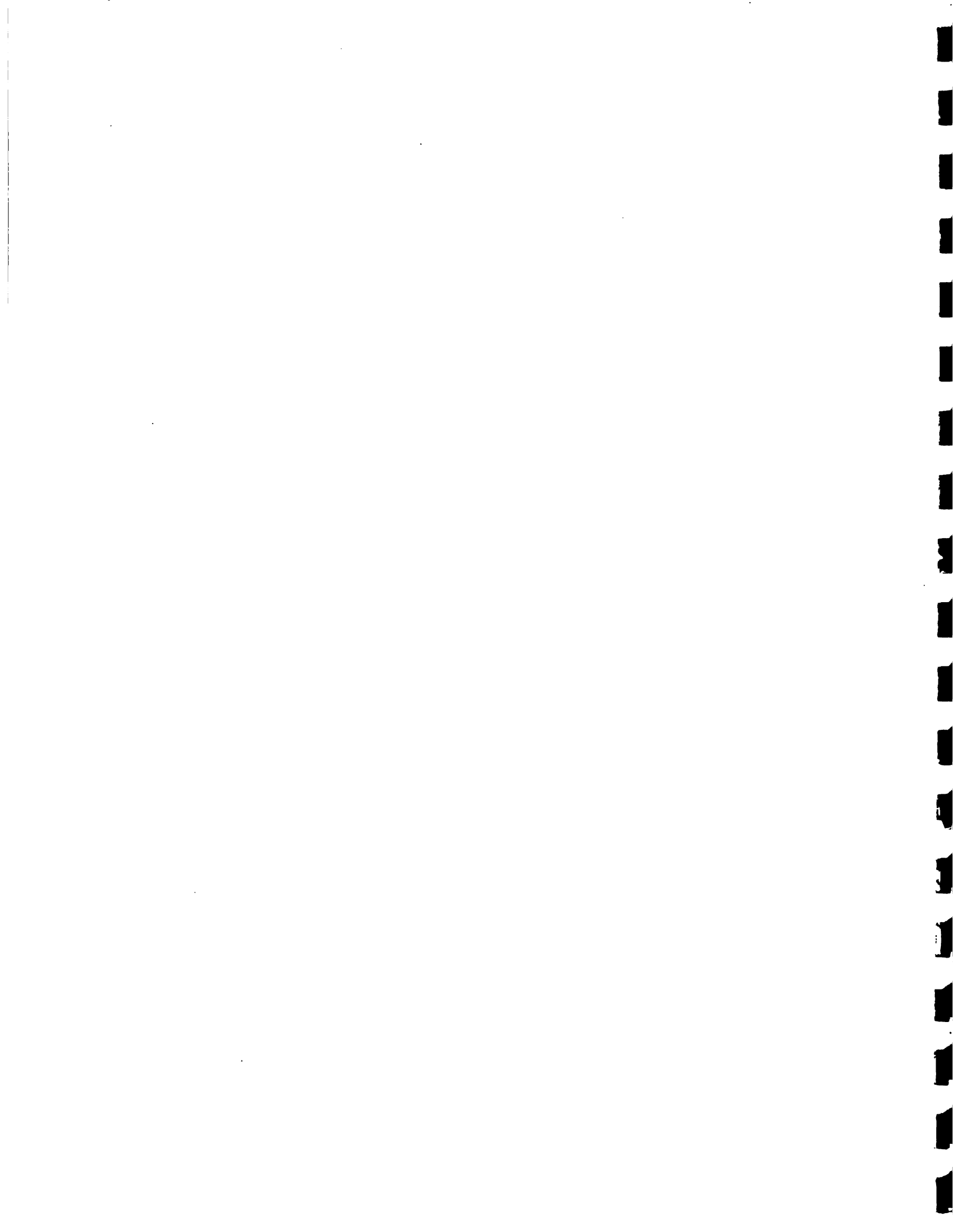
I. REVENUE	
sales	
residual value	
II. INVESTMENTS & OPERATING EXPEND.	
pasture establish.	80148
housing	14236
handling equipment	22100
machinery & tools	23500
purchase of animal	0
operating expend.	0
III. NET BENEFIT BEFORE FINANCING	20298
	-80148
IV. FINANCING	0
short term loans	
long term loans	
V. DEBT SERVICE	0
short term loans	
long term loans	
VI. NET BENEFIT AFTER FINANCING	-80148

SOURCE: IICA/MANR - I.L.P.





MODEL 14



FEEDL

ITEM	W/O PROJ.	1	2	3	4	5	6
<b>I. BREEDING BULLS</b>							
deaths							
culls							
<b>II. BREEDING COWS</b>							
deaths							
culls							
<b>III. CALVEM</b>							
birth							
deaths							
transfer female							
transfer male							
<b>IV. HEIFERS</b>							
deaths		.05	.05	.05	.05	.05	.05
transfers							
sales		0	1	1	1	1	1
<b>V. STEERS</b>							
deaths		.05	.05	.05	.05	.05	.05
sales		0	1	1	1	1	1

PRICES OF ANIMALS, THOUSANDS OF \$

bulls	2.5	2.5	2.5	2.5	2.5	2.5
cows	1.375	1.375	1.375	1.375	1.375	1.375
calves	.15	.15	.15	.15	.15	.15
heifers	1.625	1.625	1.625	1.625	1.625	1.625
steers	1.733	1.733	1.733	1.733	1.733	1.733

NUMBER OF ANIMALS

ITEM	W/O PROJ.	1	2	3	4	5	6
<b>I. BREEDING BULLS</b>							
Opening stock							
(-) deaths	0	0	0	0	0	0	0
(-) culls	0	0	0	0	0	0	0
(+) purchases	0	0	0	0	0	0	0
Closing stock	0	0	0	0	0	0	0
<b>II. BREEDING COWS</b>							
Opening stock							
(-) deaths	0	0	0	0	0	0	0
(-) culls	0	0	0	0	0	0	0
(+) purchases	0	0	0	0	0	0	0
(+) transfers	0	0	0	0	0	0	0
Closing stock	0	0	0	0	0	0	0
<b>III. CALVEM (3 DAY)</b>							
Births	0	0	0	0	0	0	0
(-)deaths	0	0	0	0	0	0	0
(-)Transf. fee.	0	0	0	0	0	0	0
(-)Transf. male	0	0	0	0	0	0	0
Sales	0	0	0	0	0	0	0
<b>IV. HEIFERS</b>							
Opening stock	0	0	0	0	0	0	0
(+) Transf. fee	0	0	0	0	0	0	0
(+) purchases	0	0	25	25	25	25	25
(-) deaths	0	0	1	1	1	1	1
(-) transfers	0	0	0	0	0	0	0
(-) sales	0	0	24	24	24	24	24
Closing stock	0	0	0	0	0	0	0
<b>V. STEERS</b>							
Opening stock	0	0	0	0	0	0	0
(+) Transf. male	0	0	0	0	0	0	0
(+) purchases	0	0	75	75	75	75	75
(-) deaths	0	0	4	4	4	4	4
(-) sales	0	0	71	71	71	71	71
Closing stock	0	0	0	0	0	0	0

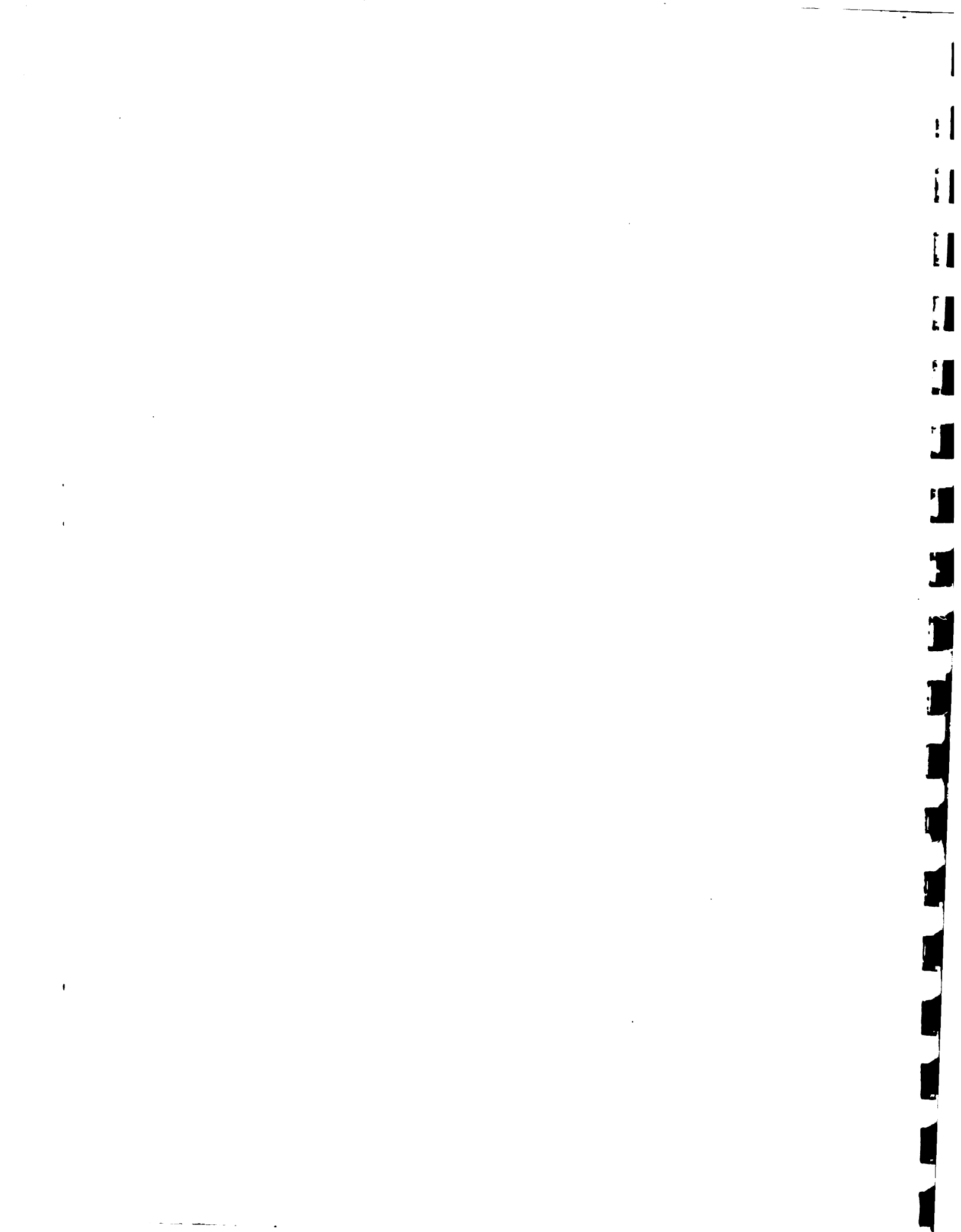
TOTAL SALES THOU.\$	0	0	162.07	162.07	162.07	162.07	162.07
bulls	0	0	0	0	0	0	0
cows	0	0	0	0	0	0	0
calves	0	0	0	0	0	0	0
heifers	0	0	38.59375	38.59375	38.59375	38.59375	38.59375
steers	0	0	123.4763	123.4763	123.4763	123.4763	123.4763

bulls	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cows	0.00	0.00	0.00	0.00	0.00	0.00	0.00
heifers	0.00	0.00	0.00	0.00	0.00	0.00	0.00
steers	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CLOSING INVEN 0008	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CHANGE INVEN 0008			0.00	0.00	0.00	0.00	0.00

FEED, M T/YR.  
MILK REPLACER

00  
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100  
100  
100  
500  
500  
0  
0  
500  
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700  
300  
000  
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0  
0  
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000  
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0  
0  
0  
0  
4250  
0450  
1275  
2325  
0  
0

=====  
51350  
=====



INVFL1

BARBADOS  
INTEGRATED LIVESTOCK PROJECT  
INVESTMENTS MODEL:14  
(BDS \$)

CONCEPT	YEAR OF DEVELOPMENT					TOTAL
	1	2	3	4	5	
I. HOUSING	34600	0	0	0	0	34600
calf house&stalls	12500					12500
feed bunk 64'cover	9500					9500
mounds(marl)	5000					5000
water lines&tanks	2600					2600
silo	5000					5000
II. HANDLING EQUIP	23500	0	0	0	0	23500
squeeze chute	6000					6000
loading chute	4000					4000
sprayer	3500					3500
sick&handling pen	7500					7500
inc'l. 1/16 acre						0
concrete						0
fencing	2500					2500
III. MACHINERY	0	39000	0	0	0	39000
forage harvester		10000				10000
mower		3700				3700
fertilizerspreader		4300				4300
forage wagons-2		15000				15000
molasses tank		6000				6000
						0
						0
						0
						0
						0
IV. ANIMALS	0	30000	30000	30000	30000	120000
HEIFERS		7500	7500	7500	7500	30000
STEERS		22500	22500	22500	22500	90000
						0
						0
						0
V. FORAGE DEVELOP.	14250	0	0	0	0	14250
prep.@710/acre	10650					10650
grass@85/acre	1275					1275
fertilizer,initial	2325					2325
6 bags/acre						0
						0
VI. TOTAL	72350	69000	30000	30000	30000	231350

SOURCE: IICA/MANR - I.L.P.



OPEXFL1

CONCEPT	1	2	3
I. LABOR	12200	12200	12200
fare agr 1/10 time	1800	1800	1800
fare labor-1 man	10400	10400	10400
II. FEED		118218	118218
-fodder			12200
-molasses			1800
-concentrates			10400
III. VETERINARY EXP	0		
worms, cocci, vaccination etc			
IV. FUEL & LUBRIC.			
V. REPAIRS & MAINT.			
VI. EQUIP. RENTAL			
VII. FERTILIZER			
VIII. UTILITIES			
IX. MISC'L			
X. CONTINGENCY (2%)			
XI. TOTAL			
-----			
SOURCE: IICA/MANR			

20

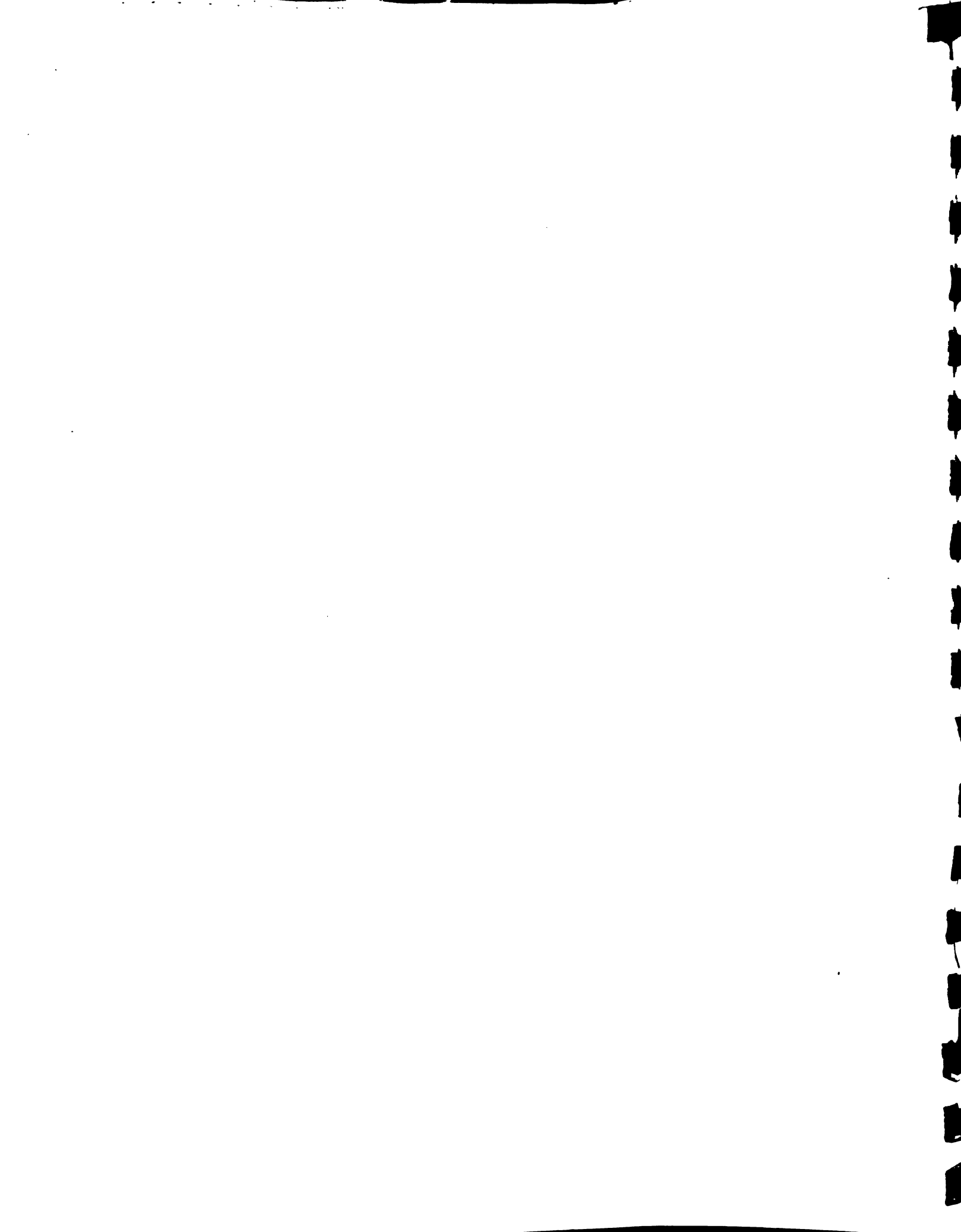




CONCEPT	1	2	3	4	5	6
I. REVENUE	0.0	189.0	189.0	189.0	189.0	189.0
sales	0.0	189.0	189.0	189.0	189.0	189.0
residual value						
II. OPERATING EXPENDITURES	92.2	206.3	171.2	171.2	171.2	171.2
pasture establish.	14.3					
housing	34.6					
handling equip.	23.5					
machinery & tools		39.0				
purchase of animals		15.0	15.0	15.0	15.0	15.0
operating expenditures	19.8	152.3	156.2	156.2	156.2	156.2
III. NET BENEFIT						
BEFORE FINANCING	-92.2	-17.3	17.8	17.8	17.8	17.8
IV. FINANCING	72.3	15.0	0.0	0.0	0.0	0.0
short term loans						
long term loans	72.3	15.0				
V. DEBT SERVICE	0.0	6.5	7.9	12.8	13.7	13.7
short term repayment						
long term repayment	0.0	6.5	7.9	12.8	13.7	13.7
VI. NET BENEFIT AFTER FINANCING	-19.9	-8.8	9.9	5.0	4.1	4.1

SOURCE: IICA/MANR-I.L.P.

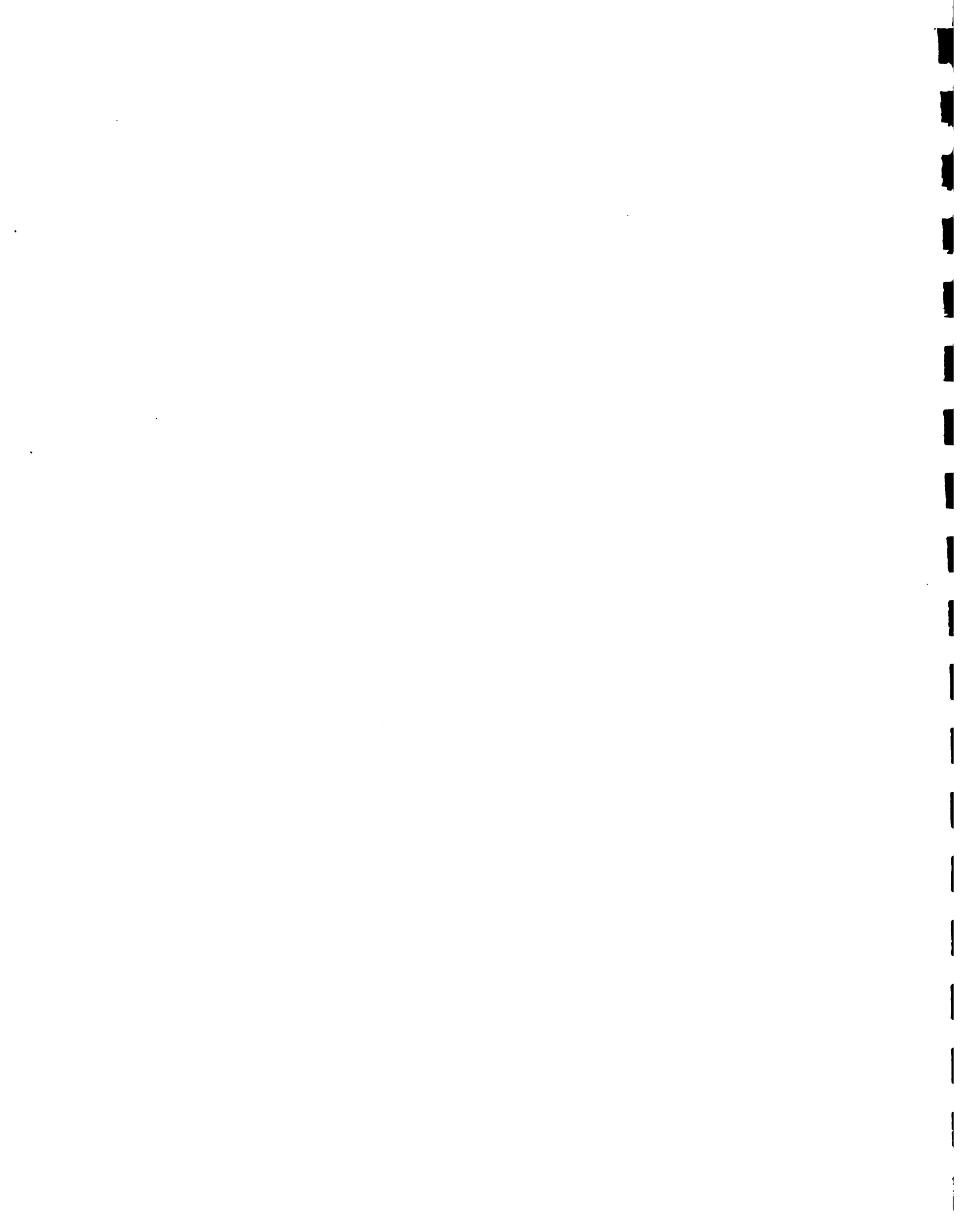
NPV @ 12% = 17.3  
 NPV @ 20% = -0.8



ANNEX III - 2



MODEL 7









INVD121

BARBADOS  
INTEGRATED LIVESTOCK PROJECT  
INVESTMENTS MODEL:7  
(BDS \$)

CONCEPT	YEAR OF DEVELOPMENT					TOTAL
	1	2	3	4	5	
I. HOUSING	233100	0	0	0	0	233100
milk parlour	75800					75800
cattle barn	122700					122700
						0
water lines & tank	10600					10600
3 silos 20'x90'x8'	24000					24000
II. HANDLING EQUIP	13500	0	0	0	0	13500
squeeze chute	6000					6000
loading chute	4000					4000
sprayer	3500					3500
						0
						0
						0
						0
III. MACHINERY	81500	94200	0	0	0	175700
tractor, 4whl 84hp	40500	40500				81000
truck	29000					29000
						0
forage harvester	12000					12000
2 forage wagons		24000				24000
fertilizer spread		4300				4300
mower		3700				3700
rake		6700				6700
manure spreader		15000				15000
						0
IV. ANIMALS	0	500000	75000	0	0	575000
cows		500000	75000			575000
						0
						0
						0
						0
V. PASTURE DEVELOP	61750	0	0	0	0	61750
prep. @710/acre	46150					46150
grass @95/acre	5525					5525
fertilizer, initial	10075					10075
6 bags/acre						0
						0
VI. TOTAL	389850	594200	75000	0	0	1059050

SOURCE: IICA/MANR - I.L.P.



OPXD121

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CONCEPT	
I. LABOR	51
fare agr	18
fare labor-4 men	41
II. FEED	
-fodder	
-molasses	
-concentrates	
III. VETERINARY EXP	
total vet. calls	
for calving, tick	
fever, preg. test,	
mastitis, A.I., etc.	
IV. FUEL & LUBRIC.	10
V. REPAIRS & MAINT.	1
VI. EQUIP. RENTAL	
VII. FERTILIZER	
VIII. UTILITIES	1
IX. MISC'L	11
X. CONTINGENCY (2%)	1
XI. TOTAL	81

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SOURCE: IICA/MANR - I.L.



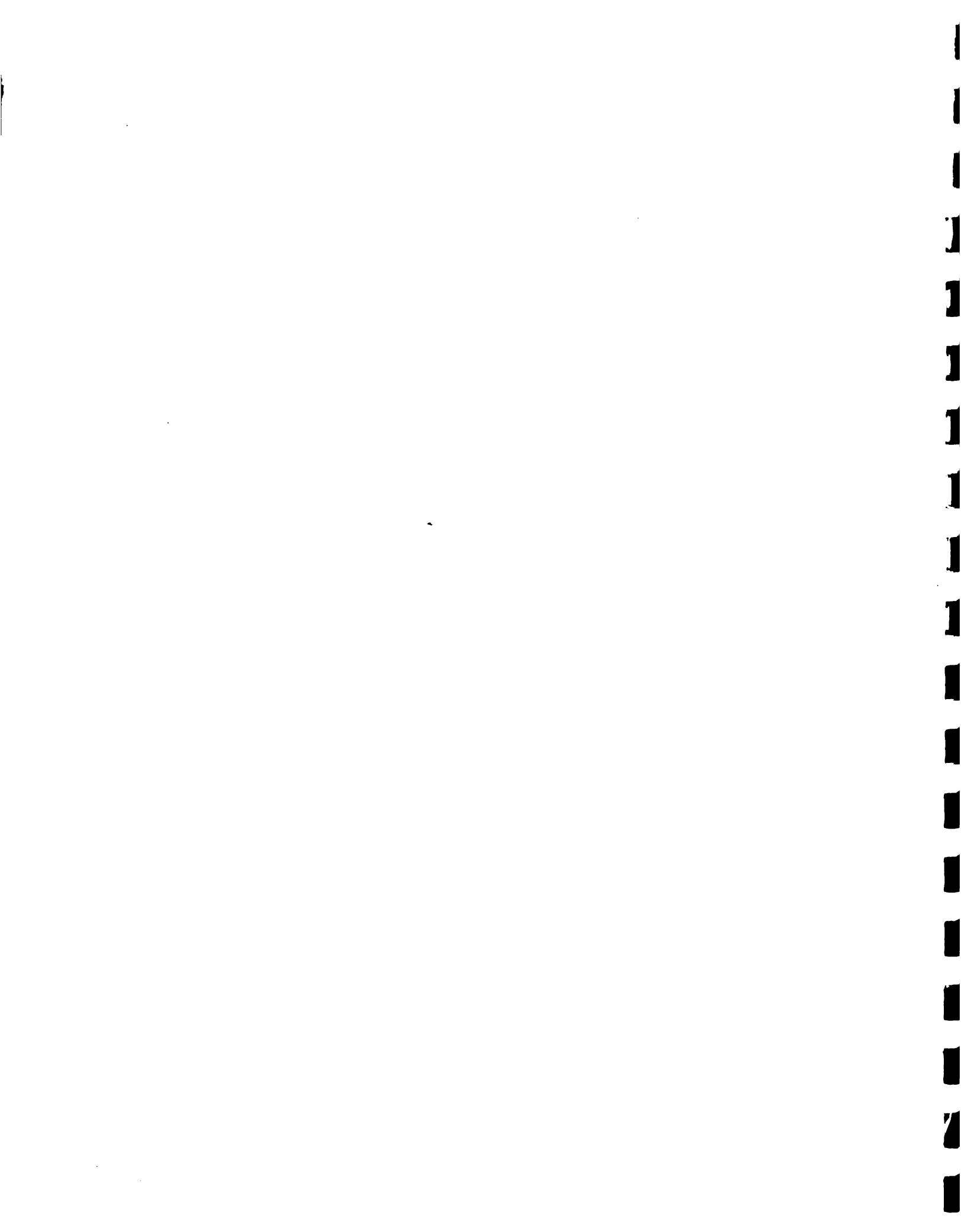
CONCEPT	1	2	3	4	5
I. REVENUE	0.0	389.3	389.3	389.5	389
sales	0.0	389.3	389.3	389.5	389
residual value					
II. OPERATING EXPENDITURES	475.8	789.6	281.6	206.6	226
pasture establish.	61.8				
housing	233.1				
handling equip.	13.5				
machinery & tools	81.5	94.2			20
purchase of animals		500.0	75.0		
operating expenditures	85.9	195.4	206.6	206.6	206
III. NET BENEFIT					
BEFORE FINANCING	-475.8	-400.3	107.7	182.9	162
IV. FINANCING	390.7	500.0	0.0	0.0	0
short term loans					
long term loans	390.7	500.0			
V. DEBT SERVICE	0.0	80.1	80.1	105.7	138
short term repayment					
long term repayment	0.0	80.1	80.1	105.7	138
VI. NET BENEFIT AFTER					
FINANCING	-85.1	19.6	27.6	77.2	24

NPV BEFORE FINANCING @12% = 206.1  
 NPV BEFORE FINANCING @24% = -224.7  
 NPV AFTER FINANCING @12% = 280.1  
 NPV AFTER FINANCING @24% = 63.9

SOURCE: IICA/MANR - I.L.P.



MODEL 8









INVD141

BARBADOS  
 INTEGRATED LIVESTOCK PROJECT  
 INVESTMENTS MODEL:8  
 (BDS \$)

CONCEPT	YEAR OF DEVELOPMENT					TOTAL
	1	2	3	4	5	
I. HOUSING	233100	0	0	0	0	233100
milk parlour	75800					75800
cattle barn	122700					122700
						0
water lines & tank	10600					10600
3 silos 20'x90'x8'	24000					24000
II. HANDLING EQUIP	13500	0	0	0	0	13500
squeeze chute	6000					6000
loading chute	4000					4000
sprayer	3500					3500
						0
						0
						0
III. MACHINERY	81500	122200	0	0	0	203700
tractor,4whl 84hp	40500	40500				81000
truck	29000					29000
mixing wagon		28000				28000
forage harvester	12000					12000
2 forage wagons		24000				24000
fertilizer spread		4300				4300
mower		3700				3700
rake		6700				6700
manure spreader		15000				15000
						0
IV. ANIMALS	0	500000	75000	0	0	537500
cows		500000	75000			575000
						0
						0
						0
V. PASTURE DEVELOP	61750	0	0	0	0	61750
prep.@710/acre	46150					46150
grass@85/acre	5525					5525
fertilizer,initial	10075					10075
6 bags/acre						0
						0
=====						
VI. TOTAL	389850	622200	75000	0	0	1087050
=====						

SOURCE: IICA/MANR - I.L.P.



CFLD141

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CONCEPT	1
<b>I. REVENUE</b>	
sales	
residual value	
<b>II. INVESTMENTS &amp; OPERATING EXPEND.</b>	
forage establish.	4754
housing	617
handling equipment	2331
machinery & tools	131
purchase of animal	811
operating expend.	854
<b>III. NET BENEFIT BEFORE FINANCING</b>	
	-4754
<b>IV. FINANCING</b>	
short term loans	
long term loans	
<b>V. DEBT SERVICE</b>	
short term loans	
long term loans	
<b>VI. NET BENEFIT AFTER FINANCING</b>	
	-4754

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SOURCE: IICA/MANR - I.L.f



DPXD141

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CONCEPT	1
<hr/>	
I. LABOR	594
farm mgr	184
farm labor-4 men	410
II. FEED	
-fodder	
-molasses	
-concentrates	
III. VETERINARY EXP	
total vet. calls	
for calving, tick	
fever, preg. test,	
mastitis, A.I., etc.	
IV. FUEL & LUBRIC.	104
V. REPAIRS & MAINT.	11
VI. EQUIP. RENTAL	
VII. FERTILIZER	
VIII. UTILITIES	15
IX. MISC'L	114
X. CONTINGENCY (2%)	14
XI. TOTAL	854

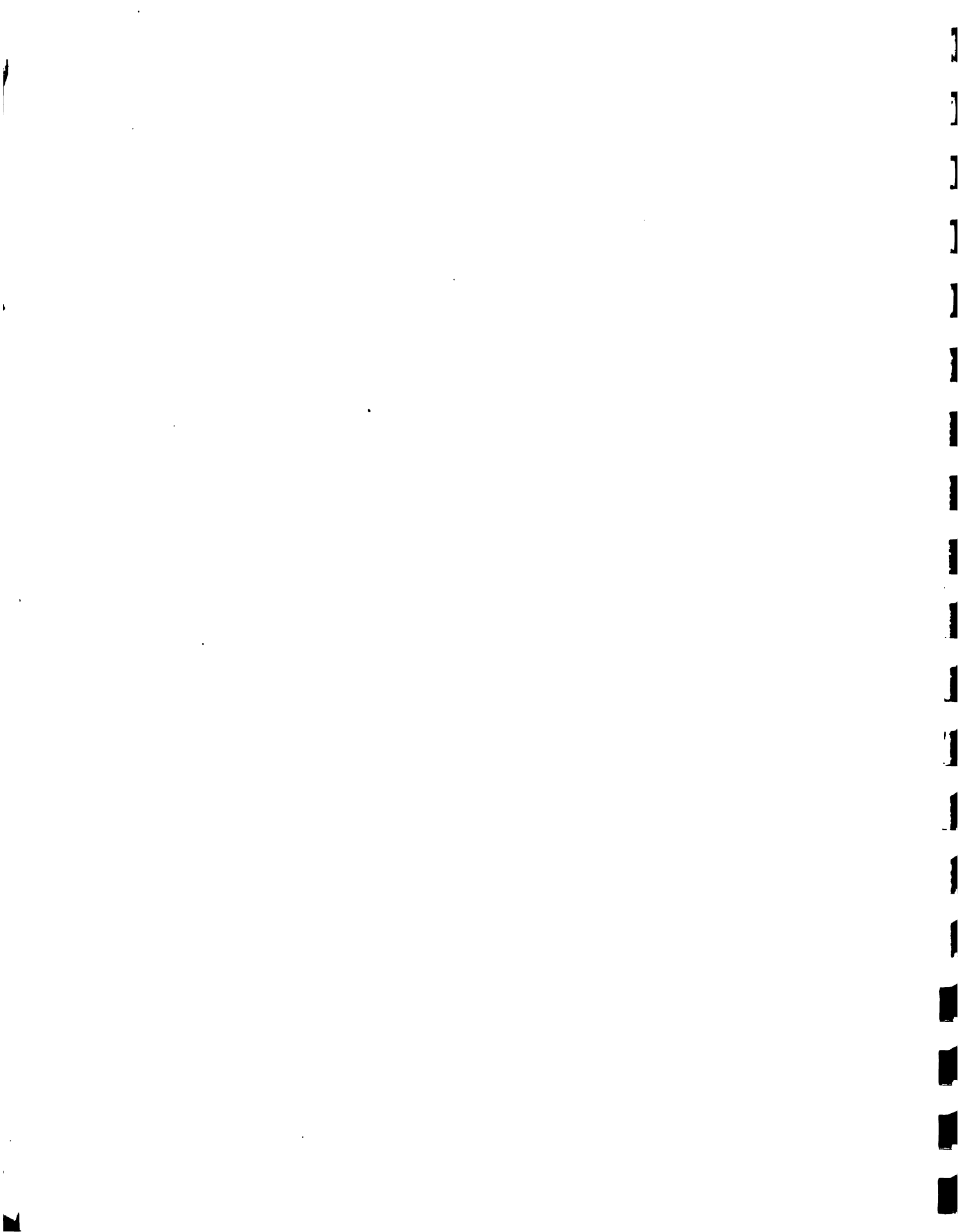
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SOURCE: IICA/MANR - I.L.9





MODEL 9





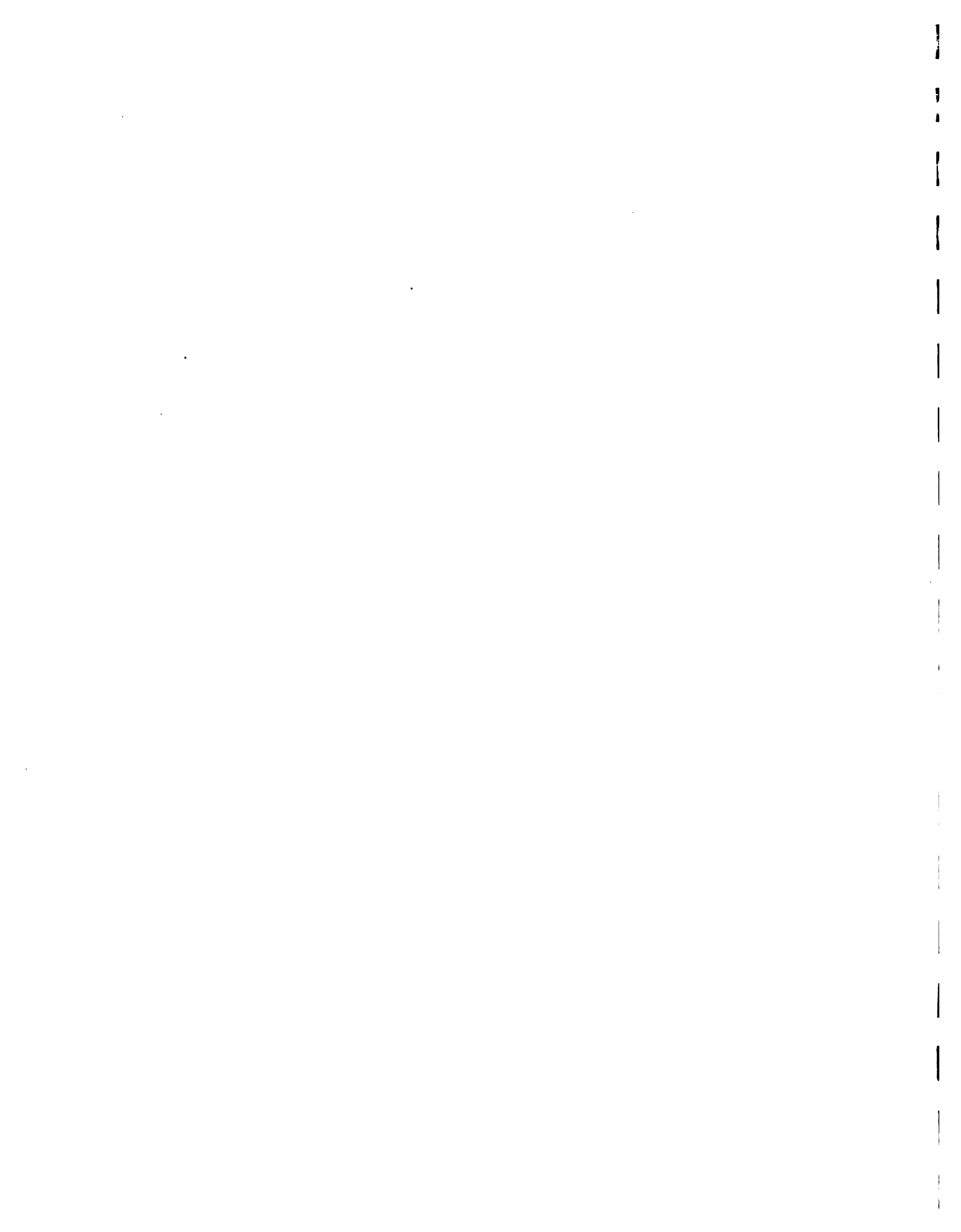


IND1211

BARBADOS  
INTEGRATED LIVESTOCK PROJECT  
INVESTMENTS MODEL:9

CONCEPT	YEAR OF DEVELOPMENT					TOTAL
	1	2	3	4	5	
I. HOUSING	0	0	0	0	0	0
milk parlour						0
cattle barn						0
water lines & tank						0
3 silos 20'x90'x8'						0
II. HANDLING EQUIP	0	0	0	0	0	0
squeeze chute						0
loading chute						0
sprayer						0
III. MACHINERY	0	0	0	0	0	0
tractor, 4whl 84hp						0
truck						0
forage harvester						0
2 forage wagons						0
fertilizer spread						0
mower						0
rake						0
manure spreader						0
IV. ANIMALS	0	25000	0	0	0	25000
cows		25000				25000
V. PASTURE DEVELOP	14250	0	0	0	0	14250
prep. @710/acre	10650					10650
grass @85/acre	1275					1275
fertilizer, initial	2325					2325
6 bags/acre						0
VI. TOTAL	14250	25000	0	0	0	39250

SOURCE: IICA/MANR - I.L.P.



OPD1211

CONCEPT	1
I. LABOR	5960
fare agr	1800
fare labor-4 men	4160
II. FEED	4833
-fodder	
-molasses	764
-concentrates	4068
III. VETERINARY EXP	1000
total vet. calls	1000
for calving, tick fever, preg. test, mastitis, A.I., etc.	
IV. FUEL & LUBRIC.	2001
V. REPAIRS & MAINT.	1450
VI. EQUIP. RENTAL	
VII. FERTILIZER	691
VIII. UTILITIES	1950
IX. MISC'L	1160
X. CONTINGENCY (2%)	381
XI. TOTAL	19431

SOURCE: IICA/MANR - I.L.P.



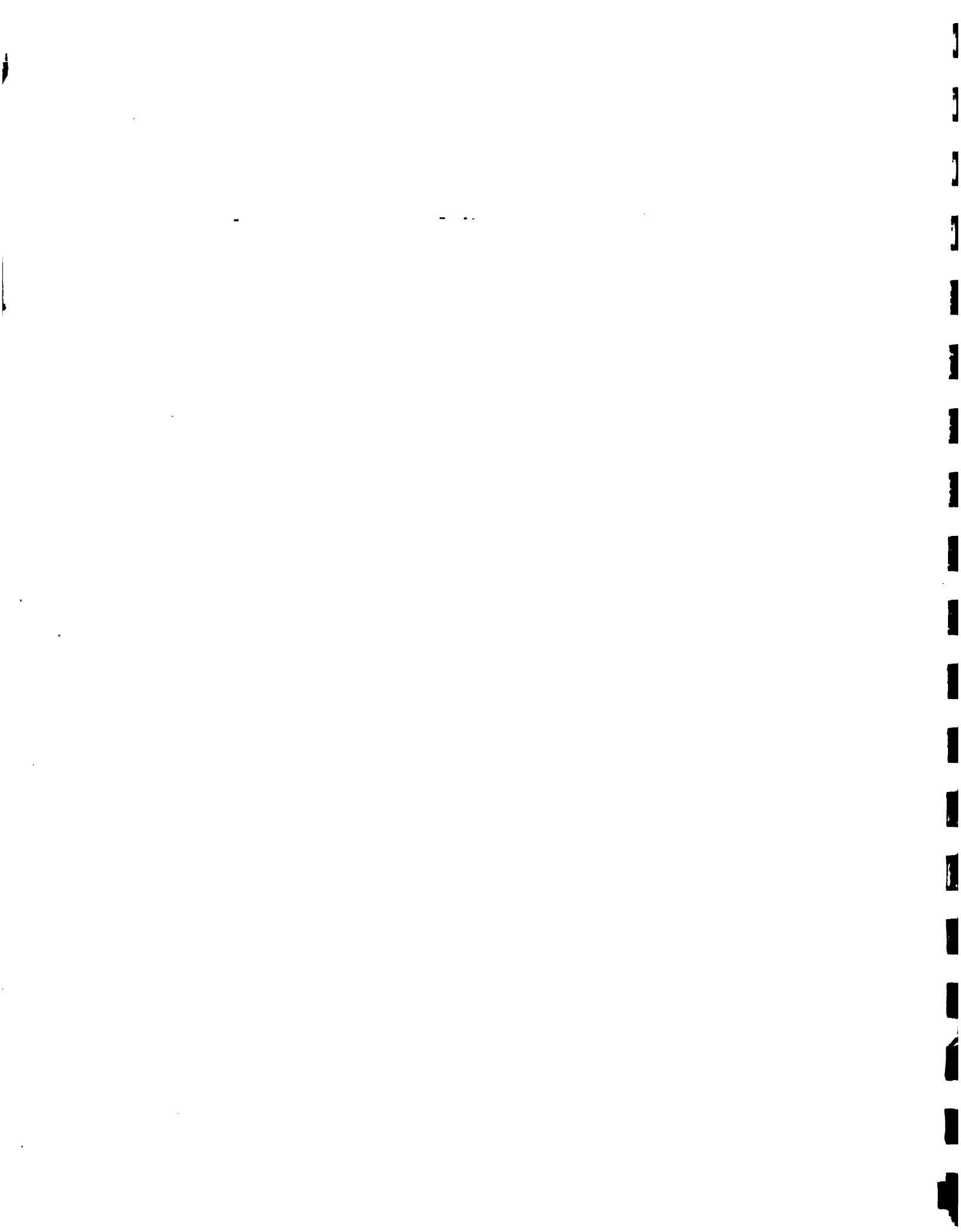


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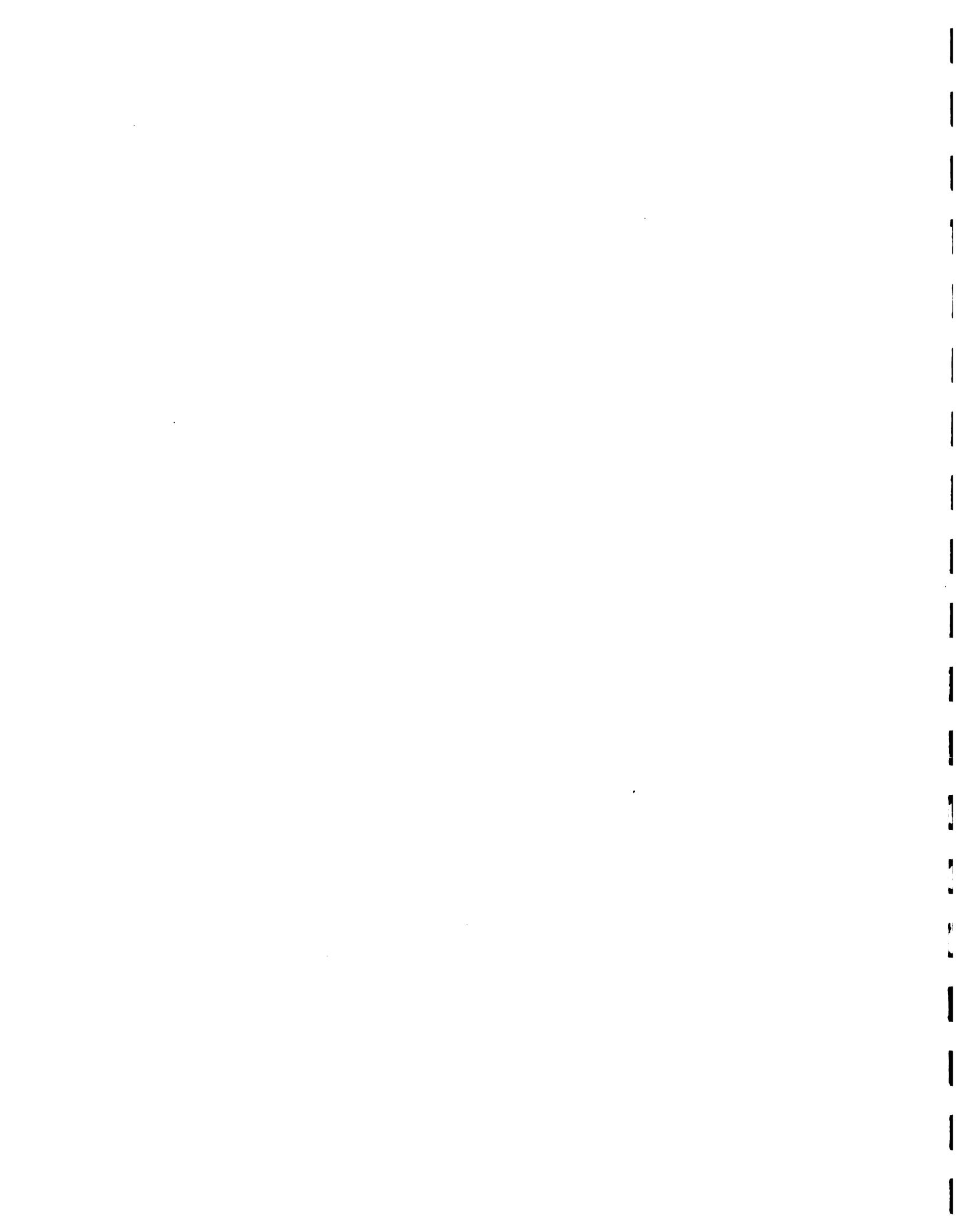
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CONCEPT	1
I. REVENUE	3894
sales	3894
residual value	
II. INVESTMENTS & OPERATING EXPEND.	2084
forage establish.	144
housing	
handling equipment	
machinery & tools	
purchase of animal	
operating expend.	1944
III. NET BENEFIT BEFORE FINANCING	1804
IV. FINANCING	
short term loans	
long term loans	
V. DEBT SERVICE	
short term loan	
long term loan	
VI. NET BENEFIT AFTER FINANCING	1804

SOURCE: IICA/MANR - I.L.1



M O D E L 10



COMD120

ITEM	W/O PROJ.	1	2	3	4	5	6
<b>I. BREEDING BULLS</b>							
deaths							
culls							
<b>II. BREEDING COWS</b>							
deaths	0	2	2	2	2	2	2
culls		13	13	13	13	13	13
<b>III. CALVES</b>							
birth	.78	.78	.78	.78	.78	.78	.78
deaths	.1	.1	.1	.1	.1	.1	.1
transfer female	1	1	1	1	1	1	1
transfer male	1	1	1	1	1	1	1
<b>IV. HEIFERS</b>							
deaths	.05	.05	.05	.05	.05	.05	.05
transfers	15	15	15	15	15	15	15
sales	0	1	1	1	1	1	1
<b>V. STEERS</b>							
deaths	.05	.05	.05	.05	.05	.05	.05
sales	0	1	1	1	1	1	1

PRICES OF ANIMALS, THOUSANDS OF \$

	1	2	3	4	5	6
bulls	1.375	1.375	1.375	1.375	1.375	1.375
cows	.62	.62	.62	.62	.62	.62
calves	1.625	1.625	1.625	1.625	1.625	1.625
heifers	1.733	1.733	1.733	1.733	1.733	1.733

NUMBER OF ANIMALS

ITEM	W/O PROJ.	1	2	3	4	5	6
<b>I. BREEDING BULLS</b>							
Opening stock		0	0	0	0	0	0
(-) deaths	0	0	0	0	0	0	0
(-) culls	0	0	0	0	0	0	0
(+) purchases	0	0	0	0	0	0	0
Closing stock	0	0	0	0	0	0	0
<b>II. BREEDING COWS</b>							
Opening stock		0	100	100	100	100	100
(-) deaths	0	0	2	2	2	2	2
(-) culls	0	0	13	13	13	13	13
(+) purchases	0	100	15	0	0	0	0
(+) transfers	0	0	0	15	15	15	15
Closing stock	0	100	100	100	100	100	100
<b>III. CALVES (3 DAY)</b>							
births	0	78	78	78	78	78	78
(-)deaths	0	8	8	8	8	8	8
(-)Transf. fee.	0	35	35	35	35	35	35
(-)Transf. male	0	35	35	35	35	35	35
sales	0	0	0	0	0	0	0
<b>IV. HEIFERS</b>							
Opening stock	0	0	15	15	15	15	15
(+) Transf. fee.	0	35	35	35	35	35	35
(+) purchases	0	2	3	3	3	3	3
(-) deaths	0	15	15	15	15	15	15
(-) transfers	0	0	21	18	18	18	18
(-) sales	0	18	15	15	15	15	15
Closing stock	0	18	15	15	15	15	15
<b>V. STEERS</b>							
Opening stock	0	0	33	35	35	35	35
(+) Transf. male	0	35	35	35	35	35	35
(+) purchases	0	2	3	4	4	4	4
(-) deaths	0	0	30	32	32	32	32
(-) sales	0	33	35	35	35	35	35
Closing stock	0	33	35	35	35	35	35

TOTAL SALES THOU.\$	1	2	3	4	5	6
bulls	0	0	0	0	0	0
cows	0	17.875	17.875	17.875	17.875	17.875
calves	0	0	0	0	0	0
heifers	0	33.73572	28.59188	28.59188	28.59188	28.59188
steers	0	51.85613	54.74547	54.74547	54.74547	54.74547

	1	2	3	4	5	6
bulls	0.00	0.00	0.00	0.00	0.00	0.00
cows	0.00	137.50	137.50	137.50	137.50	137.50
heifers	0.00	29.81	24.38	24.38	24.38	24.38
steers	0.00	87.79	60.83	60.83	60.83	60.83
CLOSING INVEN 0000	0.00	225.10	222.70	222.70	222.70	222.70
CHANGE INVEN 0000			-2.39	0.00	0.00	0.00

FEED, M T/YR.	1	2	3	4	5	6
MILK REPLACER	1	1	1	1	1	1
CALF GROWER	27	27	27	27	27	27
SILAGE	1110	1110	1110	1110	1110	1110
COLASSES	82	82	82	82	82	82
OX CALF STARTER	20	20	20	20	20	20
8X BEEF FEED	14	14	14	14	14	14
14X BEEF FEED	30	30	30	30	30	30
36X BEEF FEED						

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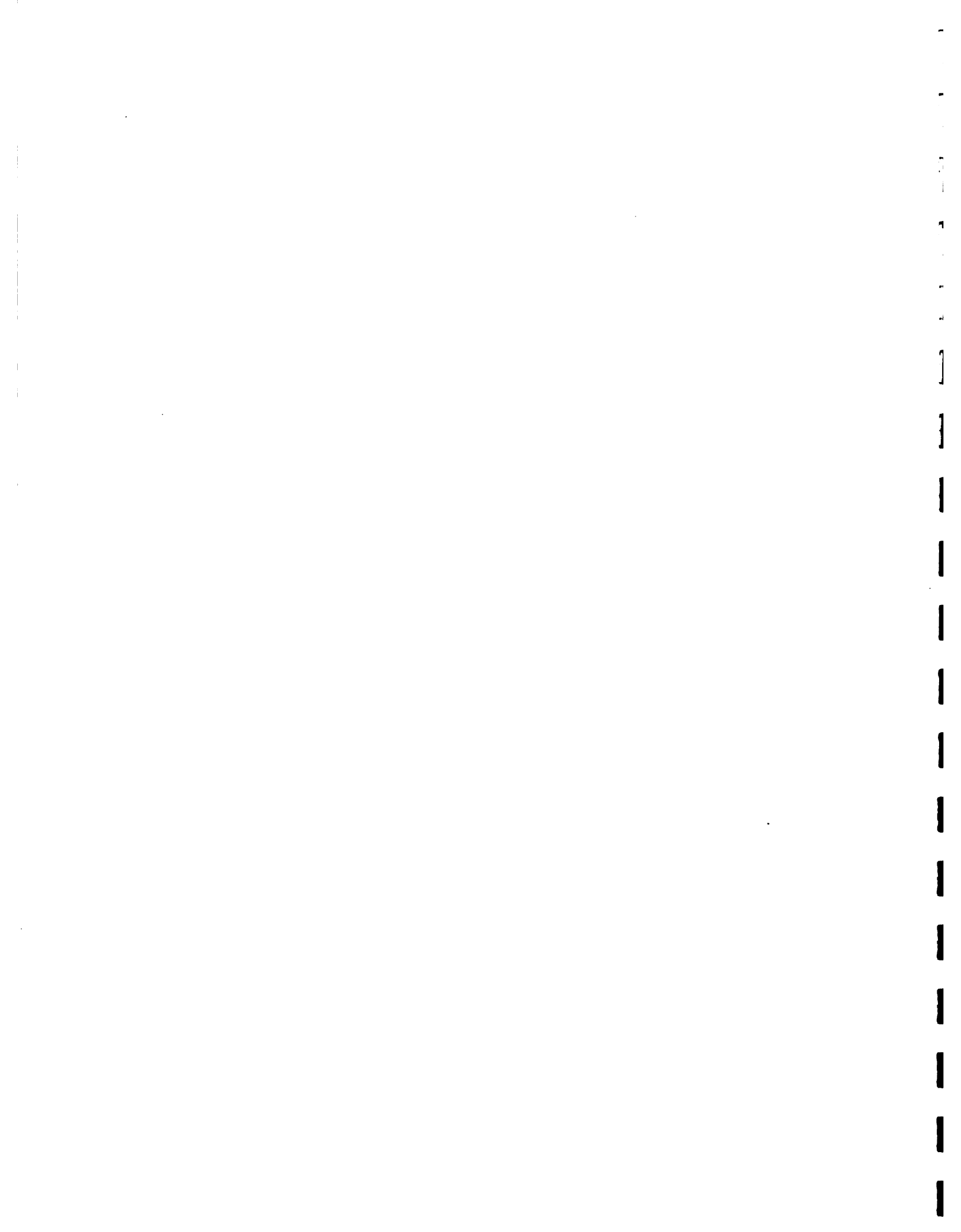


INVD120

BARBADOS  
INTEGRATED LIVESTOCK PROJECT  
INVESTMENTS MODEL: 10

CONCEPT	YEAR OF DEVELOPMENT					TOTAL
	1	2	3	4	5	
I. HOUSING	261600	0	0	0	0	261600
milk parlour	75800					75800
cattle barn	122700					122700
feed bunks & mound	14500					14500
water lines & tank	12600					12600
4 silos 20'x90'x8'	36000					36000
II. HANDLING EQUIP	21000	0	0	0	0	21000
squeeze chute	6000					6000
loading chute	4000					4000
sprayer	3500					3500
sick & handling pen	7500					7500
						0
						0
						0
III. MACHINERY	81500	94200	0	0	0	175700
tractor, 4whl 84hp	40500	40500				81000
truck	29000					29000
						0
forage harvester	12000					12000
2 forage wagons		24000				24000
fertilizer spread		4300				4300
mower		3700				3700
rake		6700				6700
manure spreader		15000				15000
						0
IV. ANIMALS	0	500000	75000	0	0	325000
cows		500000	75000			575000
						0
						0
						0
						0
V. PASTURE DEVELOP	76000	0	0	0	0	76000
prep. @710/acre	56800					56800
grass @85/acre	6800					6800
fertilizer, initial	12400					12400
6 bags/acre						0
						0
=====						
VI. TOTAL	440100	594200	75000	0	0	1109300
=====						

SOURCE: IICA/MANR - I.L.P.





CFLD120

CONCEPT

1

I. REVENUE	
sales	
residual value	
II. INVESTMENTS & OPERATING EXPEND.	52904
forage establish.	7604
housing	26164
handling equipment	2104
machinery & tools	8150
purchase of animal	
operating expend.	8894
III. NET BENEFIT BEFORE FINANCING	-52904
IV. FINANCING	
short term loans	
long term loans	
V. DEBT SERVICE	
short term loans	
long term loans	
VI. NET BENEFIT AFTER FINANCING	-52904

SOURCE: IICA/MANR - I.L.P.

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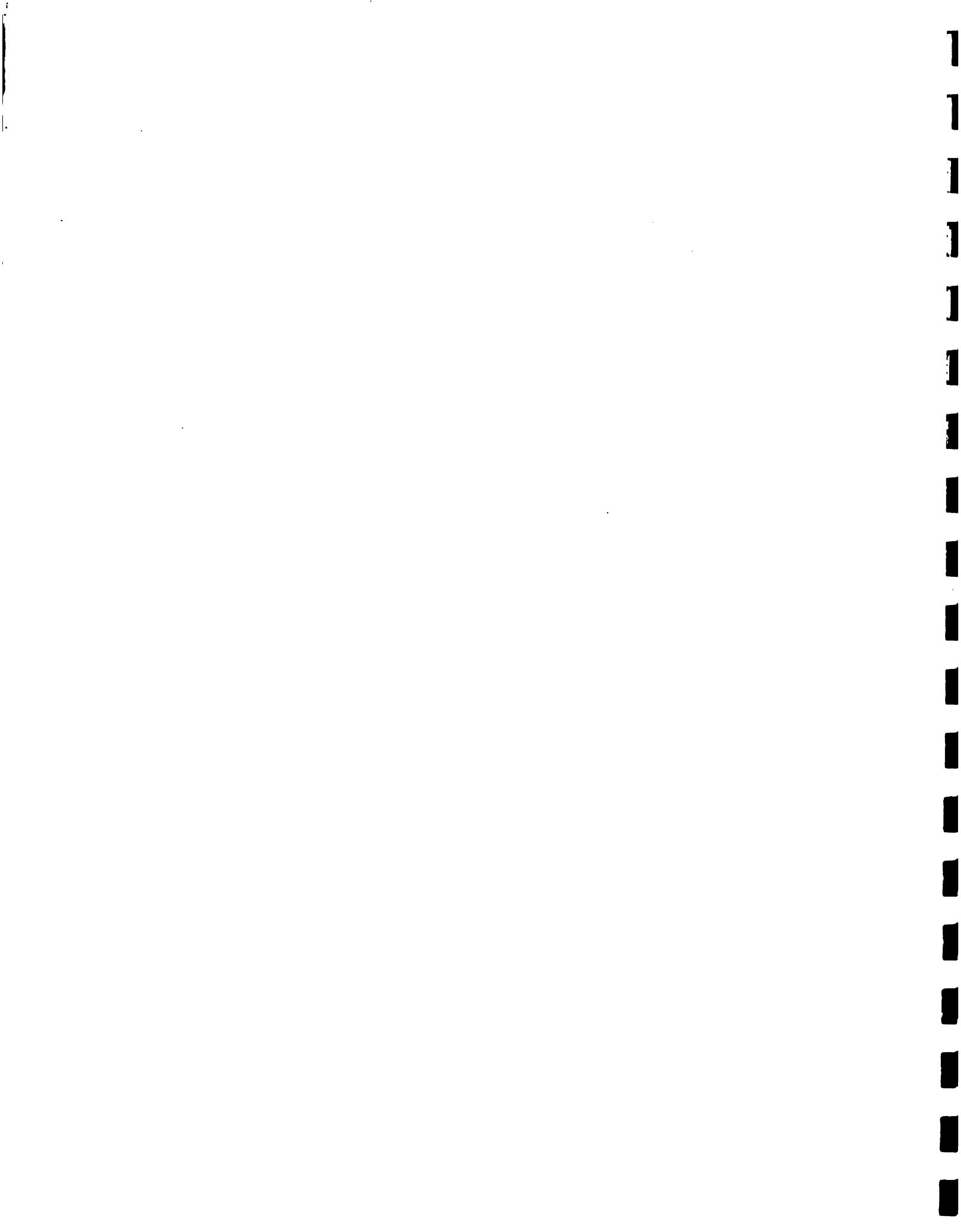
DPXD120

CONCEPT	1
I. LABOR	5960
fara agr	1800
fara labor-4 men	4160
II. FEED	
-fodder	
-molasses	
-concentrates	
III. VETERINARY EXP	
total vet. calls	
for calving, tick	
fever, preg. test,	
mastitis, A.I., etc.	
IV. FUEL & LUBRIC.	1100
V. REPAIRS & MAINT.	150
VI. EQUIP. RENTAL	
VII. FERTILIZER	
VIII. UTILITIES	150
IX. MISC'L.	1360
X. CONTINGENCY (2%)	174
XI. TOTAL	8894

SOURCE: IICA/MANR - I.L.P.

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MODEL 11



COMD140

ITEM	W/O PROJ.	1	2	3	4	5	6	7
<b>I. BREEDING BULLS</b>								
deaths								
culls								
<b>II. BREEDING COWS</b>								
deaths		0	2	2	2	2	2	2
culls			13	13	13	13	13	13
<b>III. CALVES</b>								
birth		.78	.78	.78	.78	.78	.78	.78
deaths		.1	.1	.1	.1	.1	.1	.1
transfer female		1	1	1	1	1	1	1
transfer male		1	1	1	1	1	1	1
<b>IV. HEIFERS</b>								
deaths		.05	.05	.05	.05	.05	.05	.05
transfers		15	15	15	15	15	15	15
sales		0	1	1	1	1	1	1
<b>V. STEERS</b>								
deaths		.05	.05	.05	.05	.05	.05	.05
sales		0	1	1	1	1	1	1

PRICES OF ANIMALS, THOUSANDS OF \$

bulls								
cows		1.375	1.375	1.375	1.375	1.375	1.375	1.375
calves		.62	.62	.62	.62	.62	.62	.62
heifers		1.625	1.625	1.625	1.625	1.625	1.625	1.625
steers		1.733	1.733	1.733	1.733	1.733	1.733	1.733

NUMBER OF ANIMALS

ITEM	W/O PROJ.	1	2	3	4	5	6	7
<b>I. BREEDING BULLS</b>								
Opening stock			0	0	0	0	0	0
(-) deaths	0	0	0	0	0	0	0	0
(-) culls	0	0	0	0	0	0	0	0
(+) purchases	0							
Closing stock	0	0	0	0	0	0	0	0
<b>II. BREEDING COWS</b>								
Opening stock			100	100	100	100	100	100
(-) deaths	0	0	2	2	2	2	2	2
(-) culls	0	0	13	13	13	13	13	13
(+) purchases		100	15	0	0	0	0	0
(+) transfers		0	0	15	15	15	15	15
Closing stock	0	100	100	100	100	100	100	100
<b>III. CALVES (3 DAY)</b>								
Births	0	78	78	78	78	78	78	78
(-)deaths	0	8	8	8	8	8	8	8
(-)Transf. fee.	0	35	35	35	35	35	35	35
(-)Transf. sale	0	35	35	35	35	35	35	35
Sales	0	0	0	0	0	0	0	0
<b>IV. HEIFERS</b>								
Opening stock	0	0	18	15	15	15	15	15
(+) Transf. fee	0	35	35	35	35	35	35	35
(-) purchases								
(-) deaths	0	2	3	3	3	3	3	3
(-) transfers	0	15	15	15	15	15	15	15
(-) sales	0	0	21	18	18	18	1	18
Closing stock	0	18	15	15	15	15	15	15
<b>V. STEERS</b>								
Opening stock	0	0	35	35	35	35	35	35
(+) Transf. sale	0	35	35	35	35	35	35	35
(+) purchases								
(-) deaths	0	2	3	4	4	4	4	4
(-) sales	0	0	30	32	32	32	32	32
Closing stock	0	35	35	35	35	35	35	35

TOTAL SALES THOU.S	0	719.8	823.2868	821.0123	821.0123	821.0123	821.0123	821.0123
bulls	0	0	0	0	0	0	0	0
cows	0	0	17.875	17.875	17.875	17.875	17.875	17.875
calves	0	0	0	0	0	0	0	0
heifers	0	0	33.75572	28.59188	28.59188	28.59188	28.59188	28.59188
steers	0	0	51.85613	54.74347	54.74347	54.74347	54.74347	54.74347

bulls	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cows	0.00	137.50	137.50	137.50	137.50	137.50	137.50	137.50
heifers	0.00	29.81	24.38	24.38	24.38	24.38	24.38	24.38
steers	0.00	57.79	60.83	60.83	60.83	60.83	60.83	60.83
CLDSING INVEN 000S	0.00	225.10	222.70	222.70	222.70	222.70	222.70	222.70
CHANGE INVEN 000S			-2.39	0.00	0.00	0.00	0.00	0.00

FEED, M T/YR.								
MILK REPLACER		1	1	1	1	1	1	1
CALF GROWER		27	27	27	27	27	27	27
SILAGE		1110	1110	1110	1110	1110	1110	1110
MOLASSES		160	160	160	160	160	160	160
20% CALF STARTER		20	20	20	20	20	20	20

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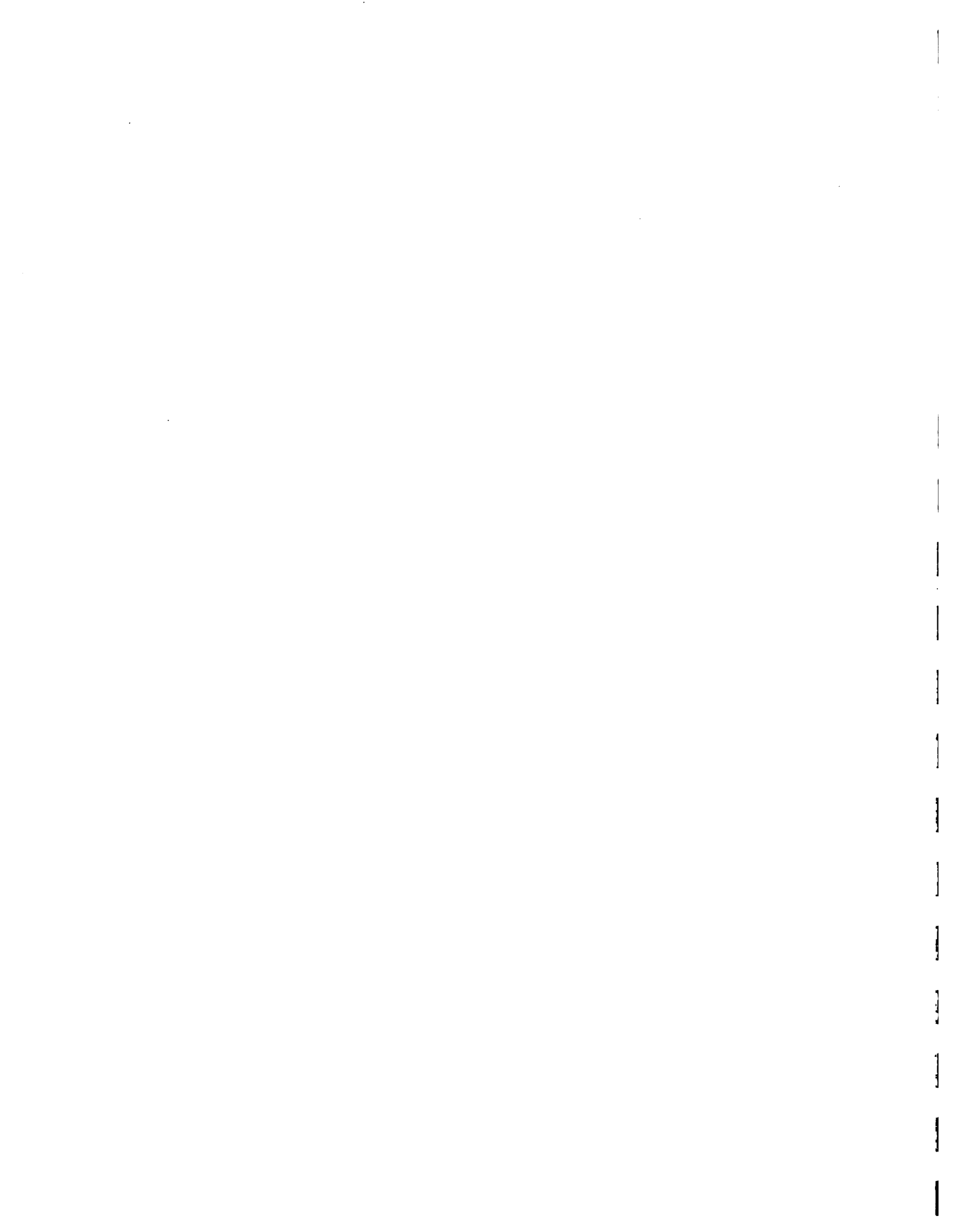


INVD140

BARBADOS  
 INTEGRATED LIVESTOCK PROJECT  
 INVESTMENTS MODEL: 11  
 (BDS \$)

CONCEPT	YEAR OF DEVELOPMENT					TOTAL
	1	2	3	4	5	
I. HOUSING	261600	0	0	0	0	261600
milk parlour	75800					75800
cattle barn	122700					122700
feed bunks & mound	14500					14500
water lines & tank	12600					12600
4 silos 20'x90'x8'	36000					36000
II. HANDLING EQUIP	21000	0	0	0	0	21000
squeeze chute	6000					6000
loading chute	4000					4000
sprayer	3500					3500
sick & handling pen	7500					7500
						0
						0
						0
III. MACHINERY	81500	122200	0	0	0	203700
tractor, 4whl 84hp	40500	40500				81000
truck	29000					29000
mixing wagon		28000				28000
forage harvester	12000					12000
2 forage wagons		24000				24000
fertilizer spread		4300				4300
mower		3700				3700
rake		6700				6700
manure spreader		15000				15000
						0
IV. ANIMALS	0	500000	75000	0	0	565000
cows		500000	75000			575000
						0
						0
						0
						0
V. PASTURE DEVELOP	76000	0	0	0	0	76000
prep. @710/acre	56800					56800
grass @85/acre	6800					6800
fertilizer, initial	12400					12400
6 bags/acre						0
						0
VI. TOTAL	440100	622200	75000	0	0	1137300

SOURCE: IICA/MANR - I.L.P.



DPXD140

CONCEPT	1
I. LABOR	596
farm agr	180
farm labor-4 men	416
II. FEED	
-fodder	
-molasses	
-concentrates	
III. VETERINARY EXP	
total vet. calls	
for calving, tick	
fever, preg. test.	
mastitis, A.I., etc.	
IV. FUEL & LUBRIC.	110
V. REPAIRS & MAINT.	15
VI. EQUIP. RENTAL	
VII. FERTILIZER	
VIII. UTILITIES	15
IX. MISC'L	13
X. CONTINGENCY (2%)	17
XI. TOTAL	889

SOURCE: IICA/MWF - I.L.P



CFLD140

CONCEPT

1

I. REVENUE

sales

residual value

II. INVESTMENTS &

OPERATING EXPEND. 52904

forage establish. 7600

housing 26160

handling equipment 2100

machinery & tools 8150

purchase of animal

operating expend. 8894

III. NET BENEFIT

BEFORE FINANCING -52904

IV. FINANCING

short term loans

long term loans

V. DEBT SERVICE

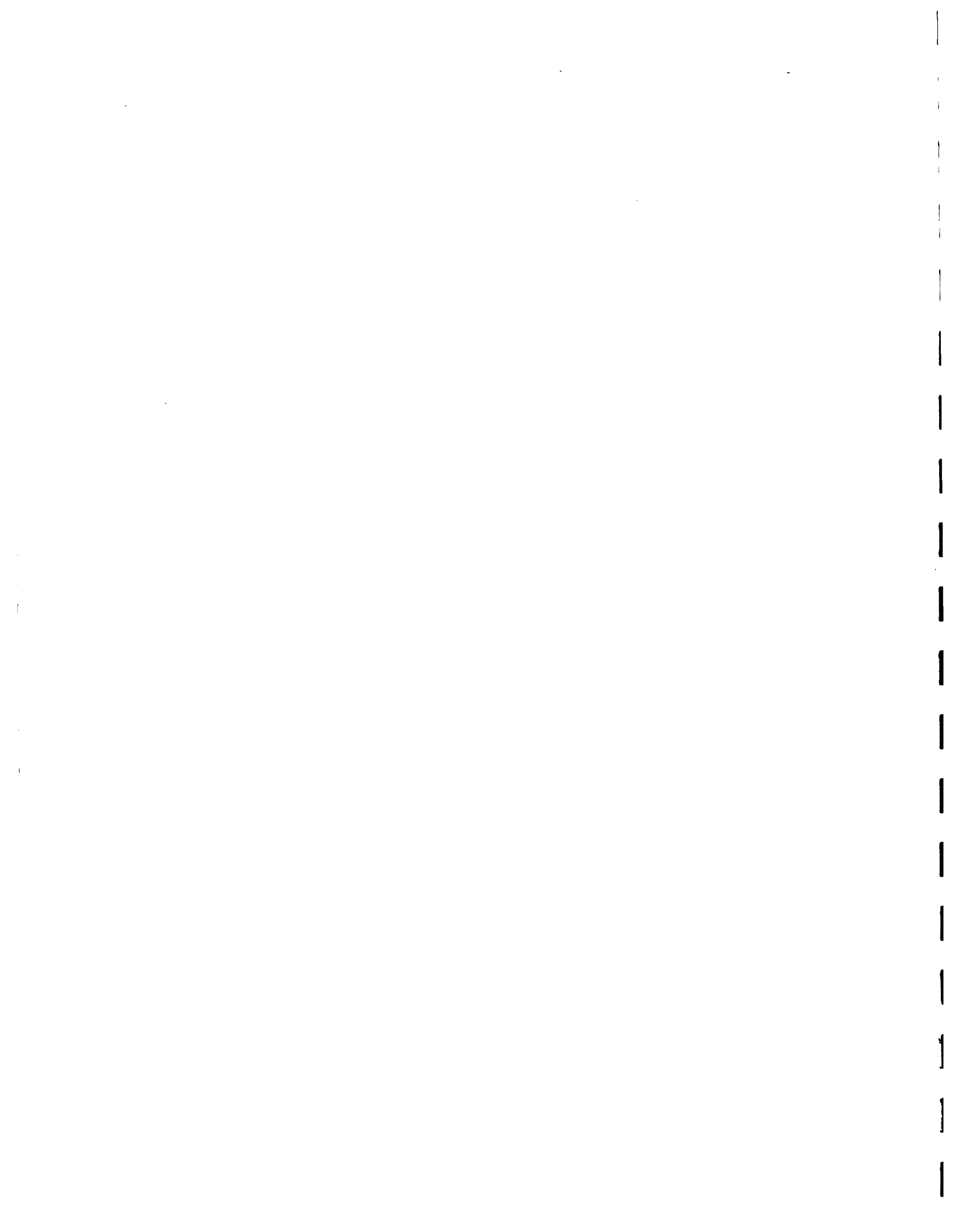
short term loan

long term loan

VI. NET BENEFIT

AFTER FINANCING -52904

SOURCE: IICA/MANR - I.L.P.



MODEL 12









IND120P

BARBADOS  
INTEGRATED LIVESTOCK PROJECT  
INVESTMENTS MODEL:12  
(BDS \$)

CONCEPT	YEAR OF DEVELOPMENT					TOTAL
	1	2	3	4	5	
I. HOUSING	111300	0	0	0	0	111300
milk parlour	75800					75800
molasses tank	12000					12000
feed bunks & mound						0
water lines & tank	14500					14500
1 silos 20'x90'x8'	9000					9000
II. HANDLING EQUIP	21000	0	0	0	0	21000
squeeze chute	6000					6000
loading chute	4000					4000
sprayer	3500					3500
sick & handling pen	7500					7500
						0
						0
						0
III. MACHINERY	88200	0	0	0	0	88200
tractor, 4whl 84hp	40500					40500
truck	29000					29000
mower	3700					3700
manure spreader	15000					15000
2 forage wagons						0
fertilizer spread						0
						0
						0
						0
						0
						0
IV. ANIMALS	0	500000	75000	0	0	575000
cows		500000	75000			575000
						0
						0
						0
						0
V. PASTURE DEVELOP	450500	0	0	0	0	450500
prep. @ 710/acre	188150					188150
grass @ 85/acre	22525					22525
fertilizer, initial	41075					41075
6 bags/acre						0
fencing @ 750/acre	198750					198750
VI. TOTAL	671000	500000	75000	0	0	1246000

SOURCE: IICA/MANR - I.L.P.

1



OXD120P

CONCEPT	1
I. LABOR	5960
fare agr	1800
fare labor-4 men	4160
II. FEED	
-fodder	
-molasses	
-concentrates	
III. VETERINARY EXP	
total vet. calls	
for calving, tick	
fever, preg. test,	
mastitis, A.I., etc.	
IV. FUEL & LUBRIC.	750
V. REPAIRS & MAINT.	150
VI. EQUIP. RENTAL	
(silage)	
VII. FERTILIZER	
VIII. UTILITIES	150
IX. MISC'L	1360
X. CONTINGENCY (2%)	167
XI. TOTAL	8537

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SOURCE: IICA/MANR - I.L.P.



CFD120P

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CONCEPT	1
I. REVENUE	
sales	
residual value	
II. INVESTMENTS & OPERATING EXPEND.	7563
pasture establish.	4503
housing	1113
handling equipment	210
machinery & tools	882
purchase of animal	
operating expend.	853
III. NET BENEFIT BEFORE FINANCING	-7563
IV. FINANCING	
short term loans	
long term loans	
V. DEBT SERVICE	
short term loans	
long term loans	
VI. NET BENEFIT AFTER FINANCING	-7563

SOURCE: IICA/MANR - I.L.P





MODEL 13

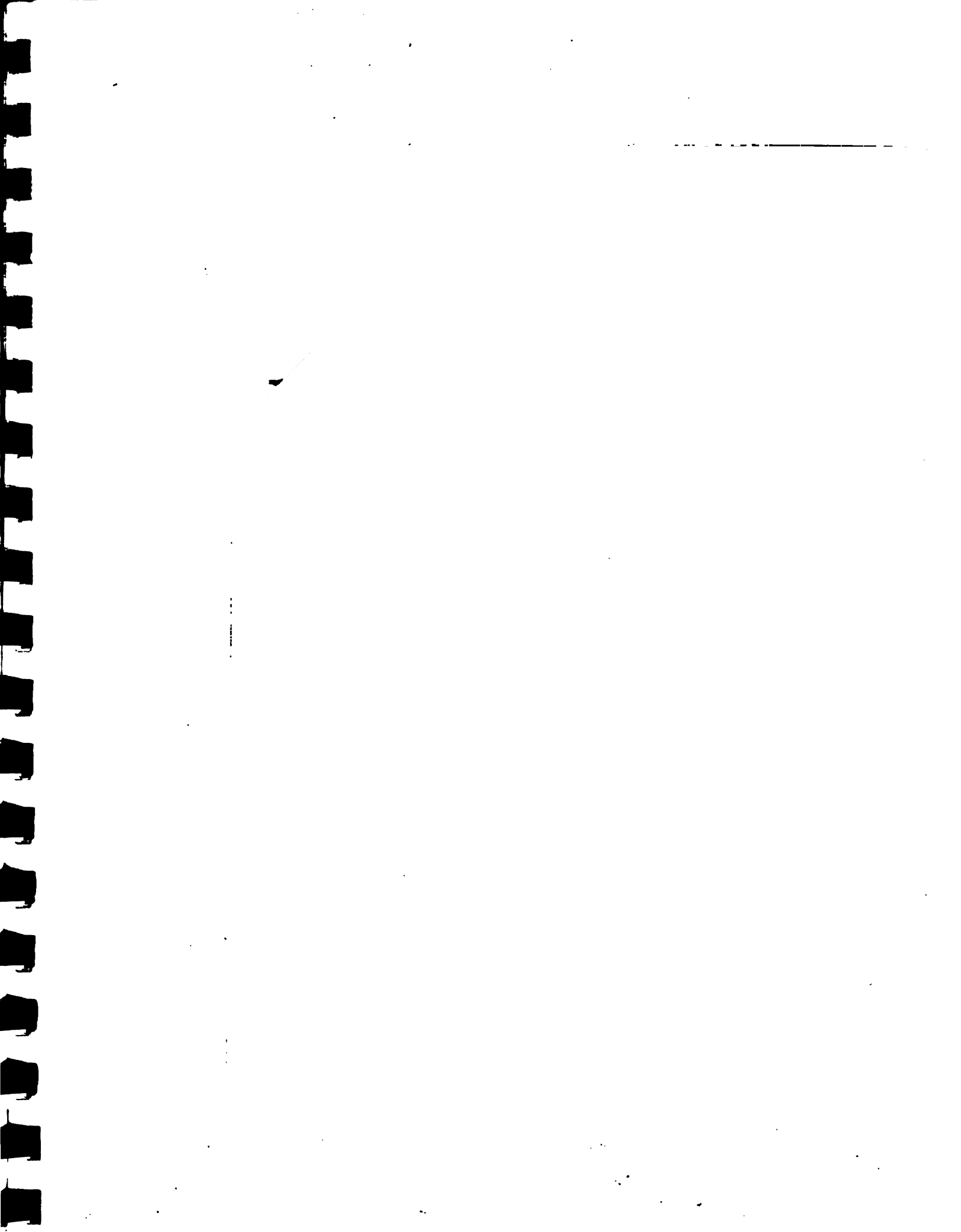


BARBADOS  
 INTEGRATED LIVESTOCK PROJECT  
 OPERATING EXPENDITURES  
 MODEL: 13  
 (BDS '000\$)

CONCEPT	1	2	3-20
I. LABOUR	40.0	40.0	40.0
management	18.0	18.0	18.0
farm labour (2)	22.0	22.0	22.0
II. FEED	24.1	33.5	33.5
III. VET. EXPENDITURES	5.0	5.3	5.3
IV. FUEL & LUBRICANTS	10.1	10.1	10.1
V. REPAIRS & MAINTENANCE	10.9	10.9	10.9
VI. FERTILIZERS	3.5	4.0	4.0
VII. UTILITIES	14.7	14.7	14.7
VIII. MISCELLANEOUS	34.0	34.0	34.0
IX. CONTINGENCIES (2%)	2.8	3.1	3.1
X. TOTAL	145.1	155.6	155.6

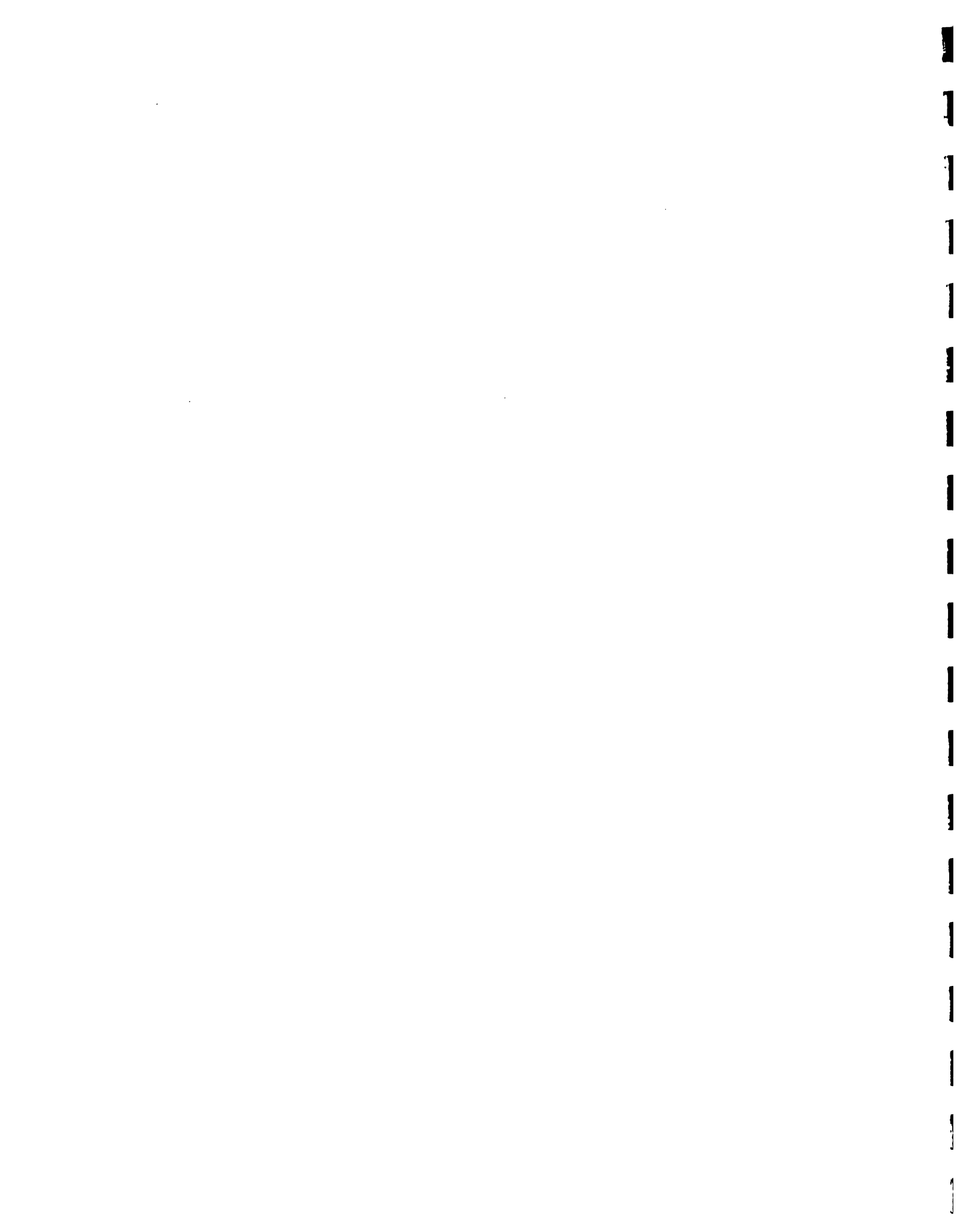
SOURCE: IICA/MANR - I.L.P







ANNEX III - 3





**BARBADOS**  
**INTEGRATED LIVESTOCK PROJECT**  
**SHEEP PRODUCERS**  
**ESTIMATED INCOME PER HOLDING**

CONCEPT	WITHOUT PROJECT	1	2	3	4-20
no of animals sold	6	6	8	8	10
carcass weight (kg)	15	18	20	23	23
total kg sold	90	108	160	184	230
price per kg	7.0	7.0	7.0	10.0	10.0
total value	630.0	756.0	1120.0	1840.0	2300.0
incremental kg		18	70	94	140
incremental value		126.0	490.0	1210.0	1670.0

Source: IICA-MANR, I.L.P.



**BARBADOS**  
**INTEGRATED LIVESTOCK PROJECT**  
**SHEEP PRODUCERS**  
**ESTIMATED TOTAL INCOME HOLDING**

	1	2	3	4	5	6	7-20
<b>N OF FARMS</b>	300	600	300	300			
<b>TOTAL WEIGHT (TONS)</b>	32.4	70.0	183.6	259.8	310.2	331.2	345
<b>PRICE ('000 B'dos \$)</b>	226.8	453.6	1450.8	2356.8	2958.0	3312.0	1380.0

Source: IICA-MANR, I.L.P.



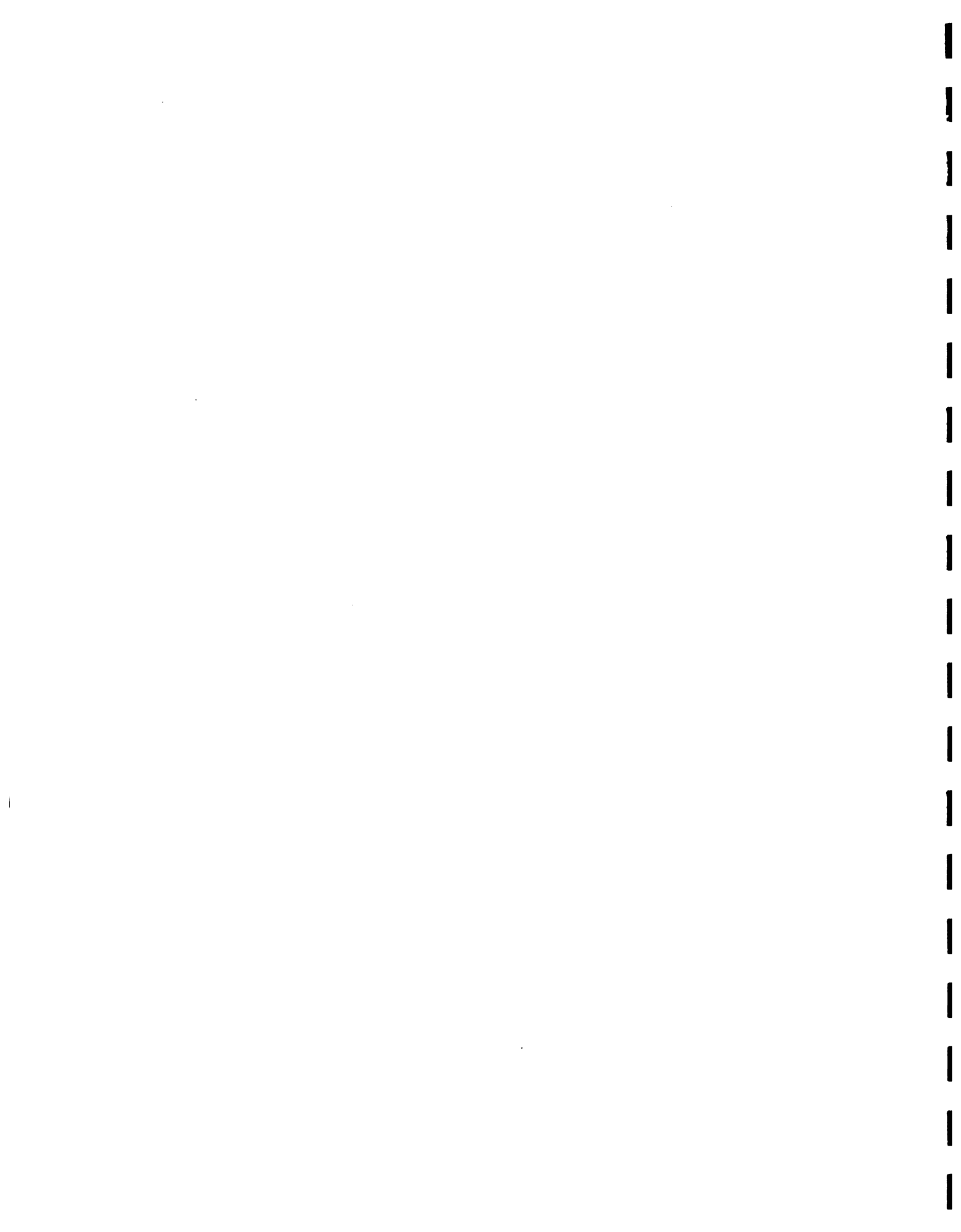
**BARBADOS**  
**INTEGRATED LIVESTOCK PROJECT**  
**SHEEP PRODUCERS**  
**ESTIMATED CASH FLOW PER HOLDING**

CONCEPT	WITHOUT PROJECT	1	2	3	4-20
I. REVENUE	630.0	756.0	1120.0	1840.0	2300.0
II. EXPENSES	728.0	1353.5	1510.3	1736.9	1736.9
feed costs	728.0	1235.0	1373.0	1579.0	1579.0
service charges		123.5	137.3	157.9	157.9
III. NET BENEFIT	-98.0	-602.5	-390.3	103.1	563.1
IV. INCREMENTAL BEN.		-504.5	-292.3	201.1	661.1

Source: IICA-MANR, I.L.P.



ANNEX III - 4





Dear Sirs,

Re: Proposed Abattoir Project.

Enclosed please find our drawings Nos. 397, '86/1 - A and B for the above proposed abattoir project. Drawing A shows the proposed site plan and perspective sketch of the buildings. Drawing B shows ground and first floor plans giving the general layout of the buildings and the flow of the product from live animals to processed meat. This drawing also shows the North and East elevations.

The Site:

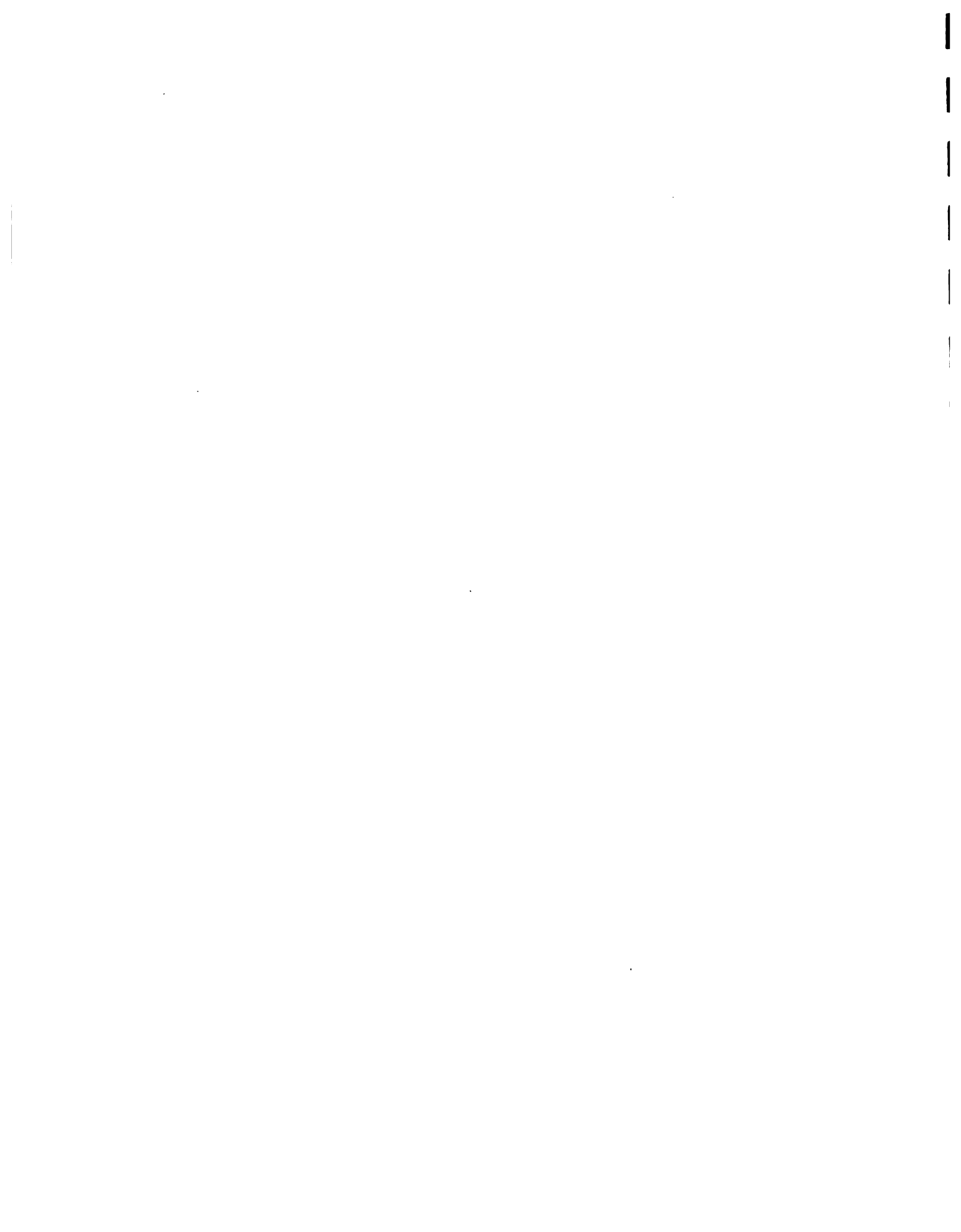
Situated at Lower Estate, St Michael (42,000N - 62,100E) indicated to us by the Ministry of Agriculture, Food and Consumer Affairs, is a triangle piece of land abutting Highway 3 on the North West, the Belle Road on the East and a secondary road which joins the above two (this road continues to Charles Rowe Bridge) on the South. The site is on a class 2 water table area, the Southern boundary of which adjoins a class 1 water table area and the Northern boundary a class 3 water table area. See location plan enclosed.

Orientation of Building:

We have located the buildings on the Northern side of the site so as to place them as far as possible from the class 1 water area and as close as possible to the class 3 water area for the safe disposal of effluent from the plant.

We have located the entrance and exit to the site on the Belle Road as far south as is practical so as to have as long a run as possible before the junction with Highway 3.

As 95% of the year the direction of the prevailing winds are between the NE to SE we have laid out the buildings to have the office and the "Clean" side to the East and the "Dirty" side to the West so that smells etc. from the "Dirty" side will be blown away from the building and not effect the office and the "Clean" areas.



General Layout of Building.

Animals will be received on the Northern side of the complex. Those by truck will exit onto an adjustable ramp, should any be received on foot there is a ramp to accomodate these. The animals will then be inspected by the vet and then weighed before being taken to their appropriate pens. Any sick animals will be taken to the sick pen provided. Trucks will be washed before leaving the site.

On slaughtering days the appropriate animals will be lead through their runs to the abattoir - beef on the Southern side and the lambs and hogs on the Northern side. The lambs and hogs are kept close together as the same height overhead rail can be used for both types of animals. As more hogs will be slaughtered than lambs we have located the VISCERA Department close to the hogs and lambs rail so as to have the minimum transfer distance of the viscera after its removal from the animal.

Inedibles will be taken to the Inedible Department for disposal. Hides will be treated in the building to the North of the area for shipment.

The paunch manure will be transfered by screw conveyor from the Viscera Department into trolleys which will take it to the Fermenting Tanks to the West of the stock pens. When fermented it can be used as fertilizer. After the carcasses are eviserated, split, washed, inspected and weighed they are moved by rail to the Chill Coolers and then to the Holding Coolers. In this area the beef is quartered so that it can be transfered to the same height rail as the lambs and hogs. From there they are either de-boned etc., delivered in quarters to the trade or stored. There is a blast Freezer to quickly reduce the temperature of the meat if it is to be stored in the storage freezer. In this area there is a small supervisor's office and a room for storing supplies. Also note we have separated the "clean" and "dirty" areas by a corridor.

We have located the Delivery and Receiving Clerks office to the East of the main doorway of the Packing etc. Department so as to protect this door from prevailing winds and rain.

The Compressor Room is located as close as possible to the freezers and cool rooms to give the shortest runs for pipes etc. Adjoining this room is the main switch gear and Transformer Room.

The abattoir staff will enter the building from the North which will give them direct access to their Wash and Changing Rooms on the first floor and the plant.

The office has direct access to the plant and the abattoir supervisor is so located as to see the operation of the abattoir from his office.

We have shown on our drawing A the proposed location of a Rendering Plant the roadway to this is included in our estimates. Should this plant not be built as this time a simple marl track is all that would be necessary to transfer paunch manure to the tanks, which would give a reduction in the cost of this item.

As this project is on a class 2 water table area, a treatment plant will be required to process the effluent from the abattoir before it is dispersed into the ground. (See Mr. Belzile's report on this). The plant floor is designed that all water will be transfered through drains to the treatment plant.



We estimate the cost of the buildings, roadways, fences etc. to the following outline specifications to be \$2,050,000.00 Barbados (see Kauffman & Associates enclosed preliminary budget). Please note these costs include for duty on imported materials, an estimated saving of \$223,700.00 (note this amount contains \$140,000.00 for the refrigerated building) could be possible if the project is Duty Free.

Main Building:

Foundation: Reinforced concrete.

Floors: Reinforced concrete - finished as follows:-  
Epoxy - Abattoir, Inedible Department, Viscera Department, Corridor, Chill Cooler and Holding Cooler.  
Ceramic Tiles - Gutting boning and packing department, supplies and washrooms.  
Vinyl Asbestos - Offices and lunch rooms.

Walls: Fairfaced concrete blocks waterproofed on the exterior and painted. The interior faces of the abattoir, Inedible Department, Viscera Department and Corridors will be fibre glass lined. Ceramic tiles will be used in the Ladies and Gents Washrooms.

Roofs: Metal frame covered with insulated metal deck, waterproofed with Neopreme Hypalon.

Please Note The walls and roof over the Coolers, Packaging Department and Freezers will be prefabricated insulated panels, pre-finished. Only the concrete floor and finish and the waterproofing of the roof will be done by the local contractor.

Hide Treatment:

Foundations: Reinforced concrete.

Floors: Reinforced concrete, trowel finish.

Walls: Load bearing fairfaced concrete blocks painted.

Roof: Metal Sheets on timber frame.

Effluent Treatment:

Plant:

Foundations: Reinforced concrete.

Floors: Reinforced concrete, trowel finished.

Walls and

Roof: Steel framed buildings clad with metal sheets.

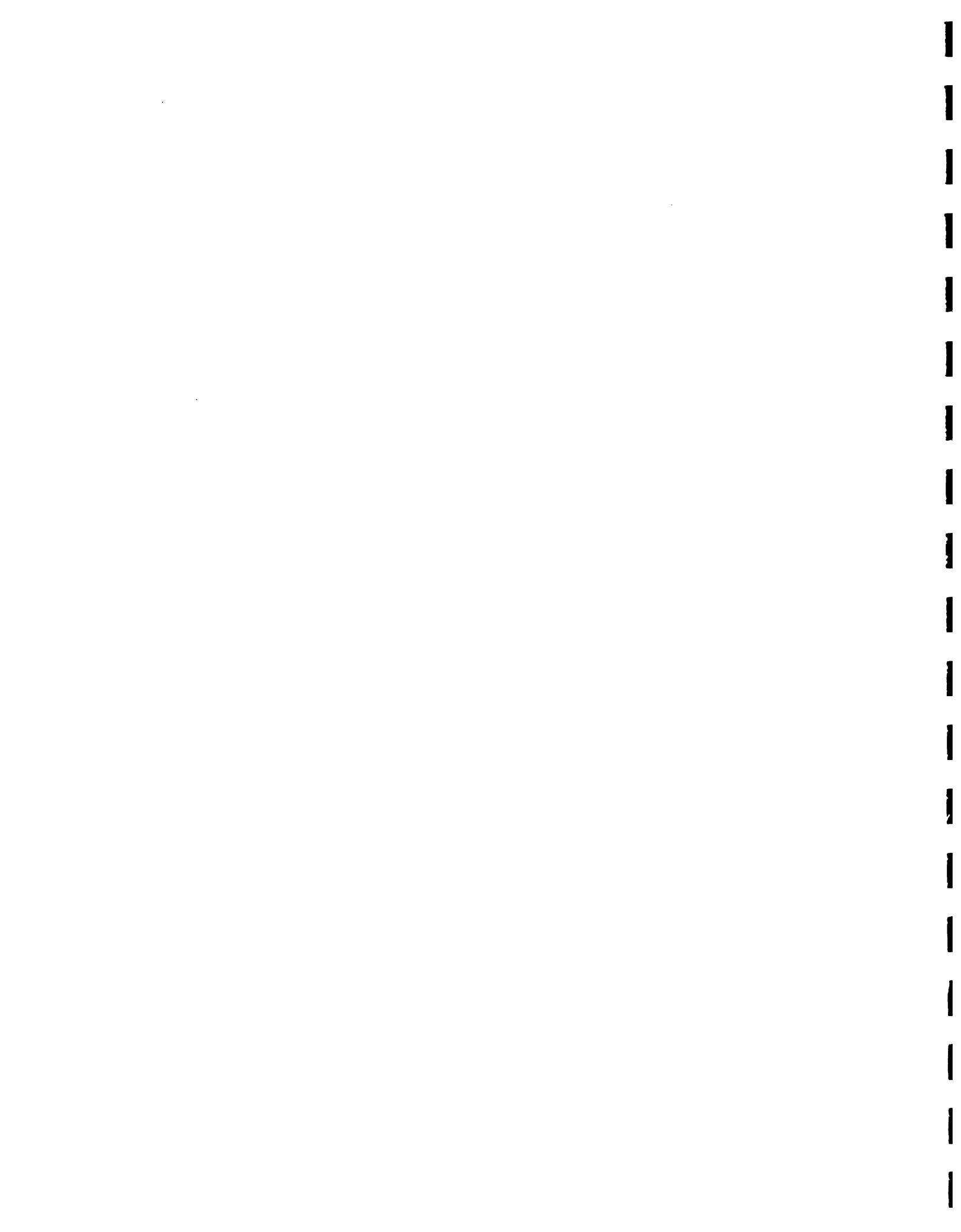
Livestock Pens and Paunch Manure Tanks:

Foundations: Reinforced concrete.

Floors: Reinforced concrete

Walls etc. Pipe columns. Side to pens - metal and/or concrete blocks.

Roof: Metal Sheets on timber frame.



Page 4.

Roadways and Parking Areas:

Barbergreen finish on suitable fill to carry the necessary loads.

Fences: 6' 0" high chain link wire secured to galvanised fence posts.

Hoping the above will meet with your approval,

We remain,

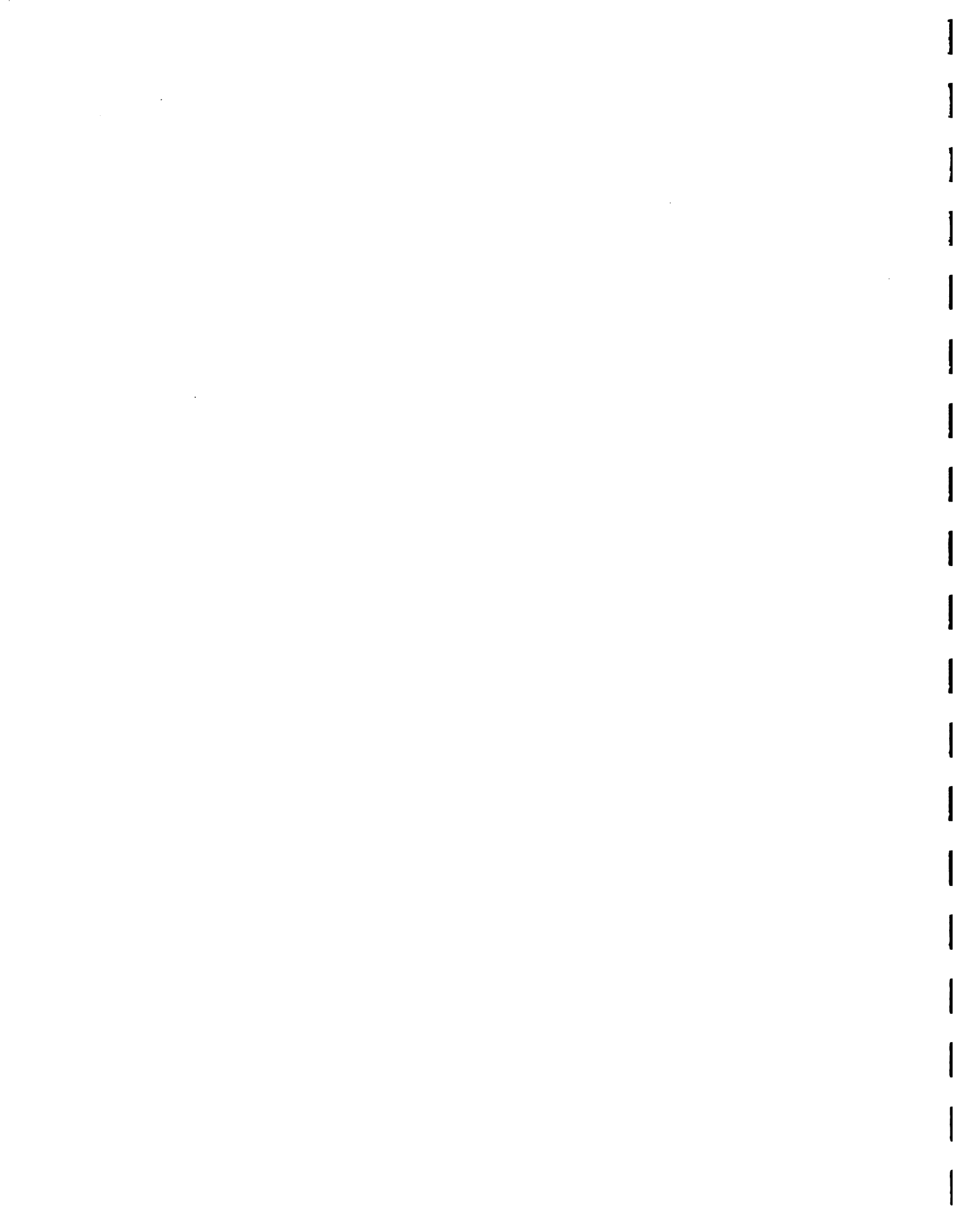
Yours faithfully,

ANTHONY HOAD ASSOCIATES LIMITED

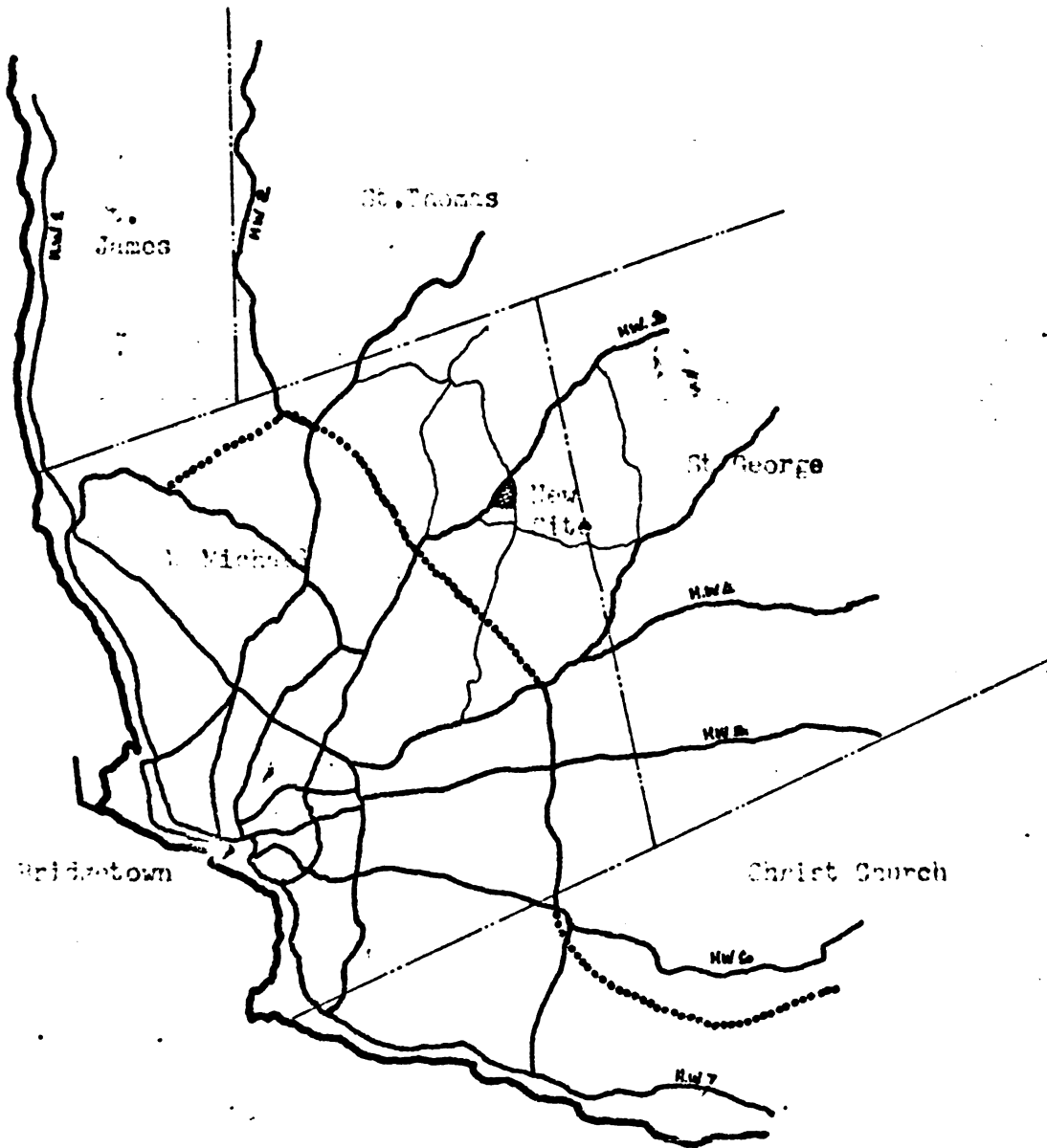
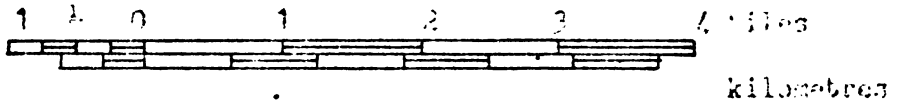


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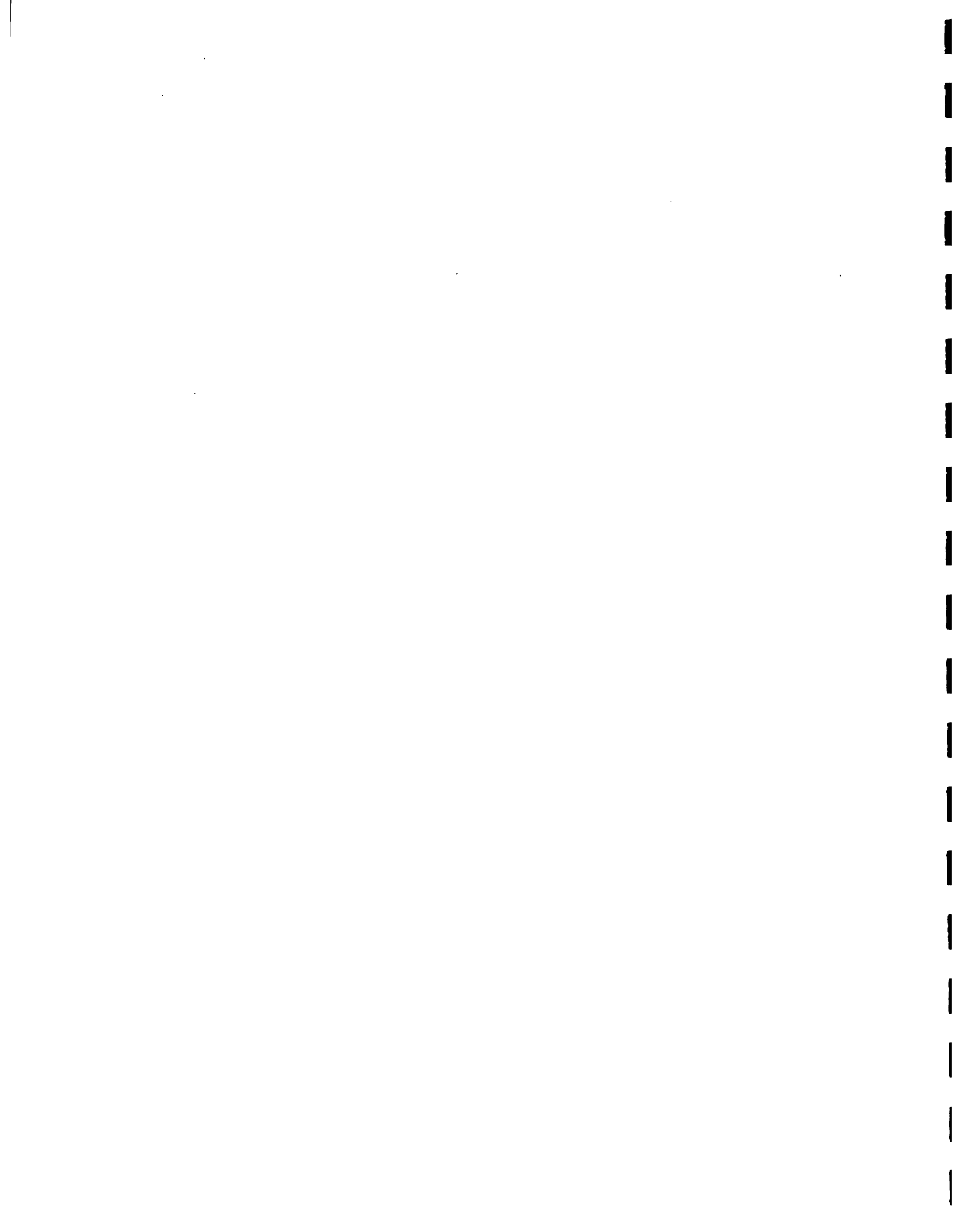
R.A.Hoad  
Managing Director







# LOCATION PLAN



PROPOSED ABATTOIR

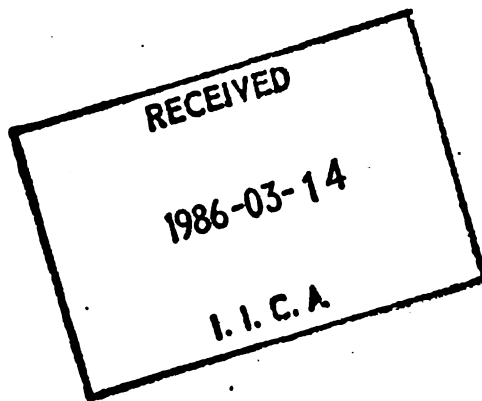
AT

LOWER ESTATE; ST. MICHAEL  
BARBADOS

FOR

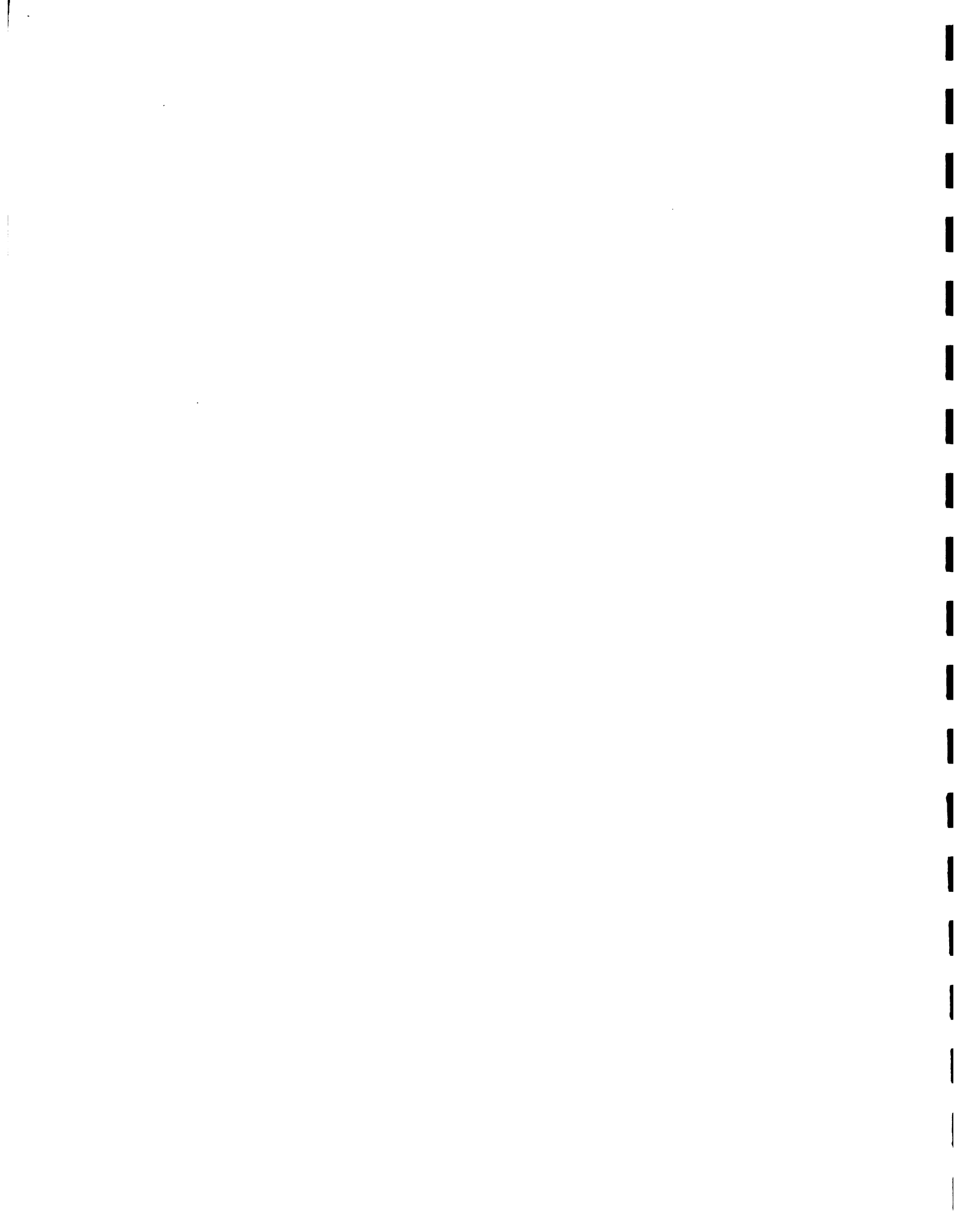
I.I.C.A./M.A.N.R - I.L.P

PRELIMINARY BUDGET ESTIMATE



W.A. Kauffman & Associates  
Chartered Quantity Surveyors

March, 1986



SUMMARY OF ESTIMATE

	B\$
Office Building	225,000.00
Abattoir	300,000.00
Mechanical	27,000.00
Viscera & Inedible	50,000.00
Offal	13,000.00
Transformer, Switchgear etc.	75,000.00
Refrigeration Building	400,000.00
Receiving & Delivery & Staff Accommodation	130,000.00
Hide & Effluent Treatment	70,000.00
Animal Pens	315,000.00
Roads and Parking Areas	205,000.00
Fencing & Gates	40,000.00
Landscaping	25,000.00
Drainage	25,000.00
Electricity & Water Supply	150,000.00

B\$2,050,000.00

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NOTES TO THE ESTIMATE

1. EQUIPMENT

The estimate does not include any allowances for the following equipment:

Abattoir:

Lander

Hoists

Steam

Cradles

Scales

Viscera:

Tripe Wash

Screw Conveyor

Offal Cooler

Chill Stores:

Prefabricated Building

Refrigeration Installations

Receiving & Delivery:

Adjustable Ramps

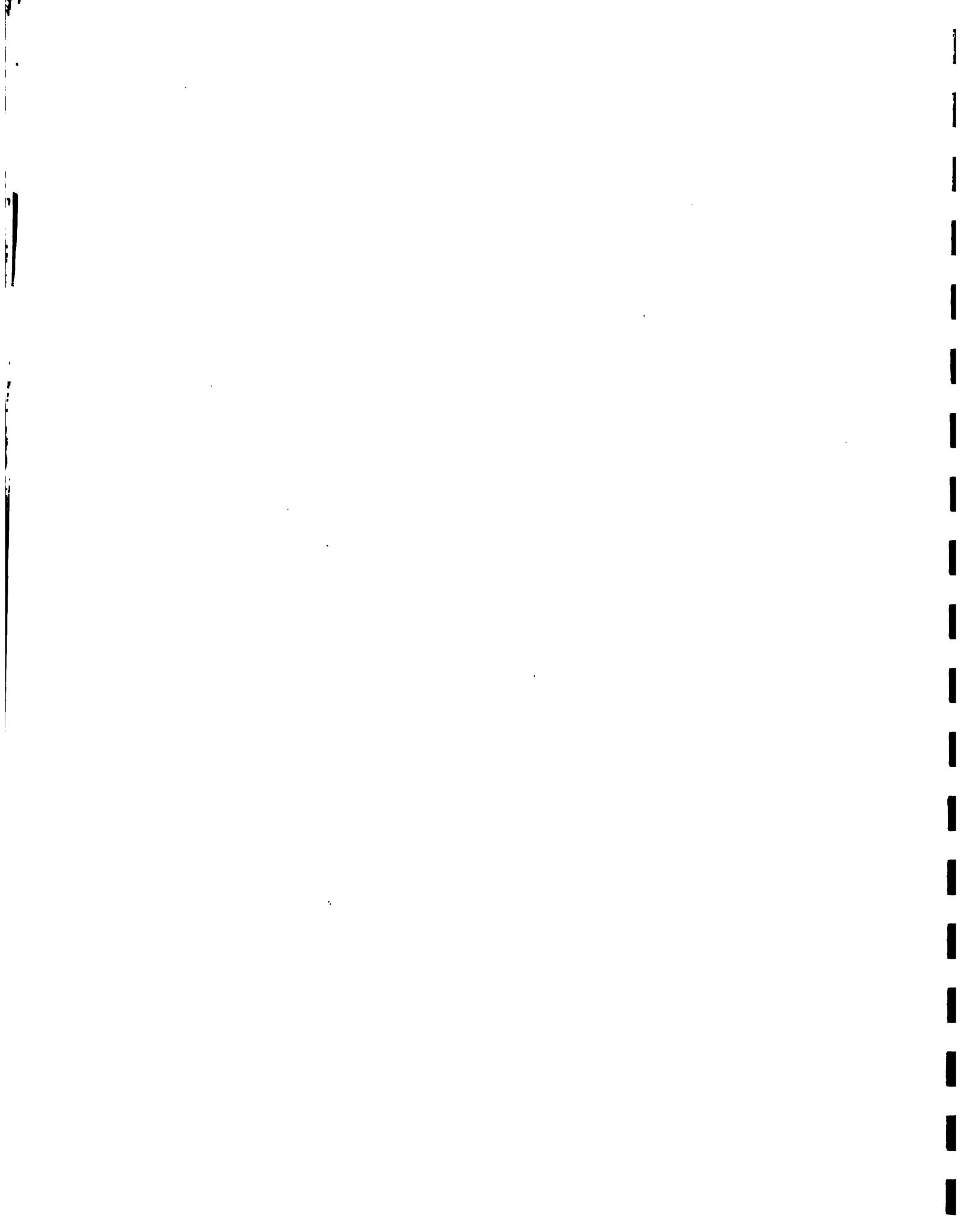
Effluent:

Treatment Plant

Livestock Receiving:

Hydraulic Ramps

Scales





2. PREFABRICATED BUILDING

The estimate includes the following costs in connection with the prefabricated building.

Labour	-	\$ 10,000.00
Duty	-	140,000.00
Rails	-	40,000.00
Epoxy Flooring	-	18,000.00
Ceramic Flooring	-	22,000.00
Roof Finish	-	65,000.00
Sundries	-	15,000.00
Substructure	-	90,000.00

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\$400,000.00

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3. CURRENT PRICES

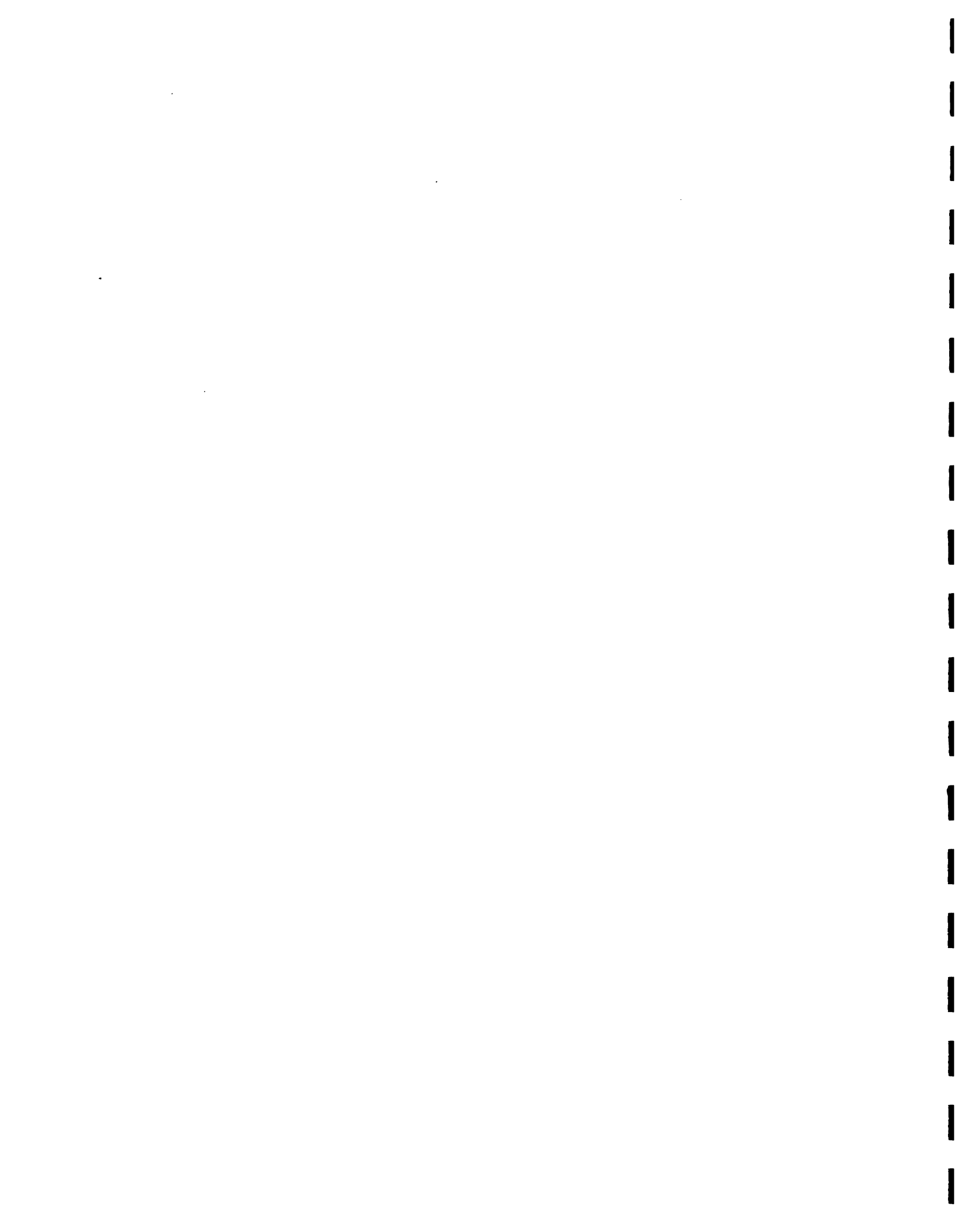
The estimate is based upon prices for materials and labour current during February, 1986. No allowance has been included for future factor cost increases.

4. LEVEL OF ACTIVITY

The estimate includes no allowances for the effect which any change in the level of activity of the construction industry of Barbados may have on tender levels within the industry.

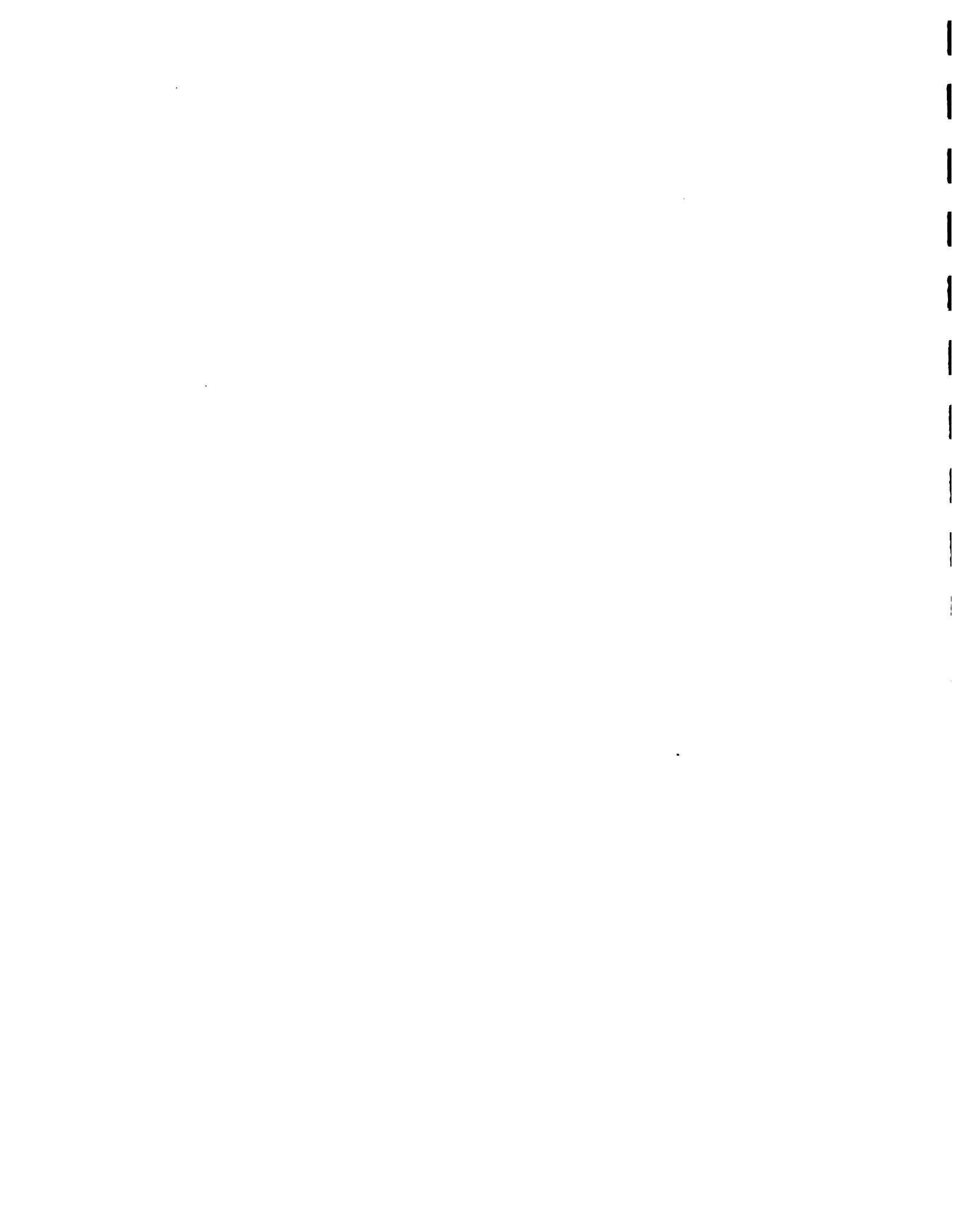
5. ACCURACY

Having regard to the information from which the estimate has been prepared it should be considered as a preliminary indication of the probable level of cost only at this time.

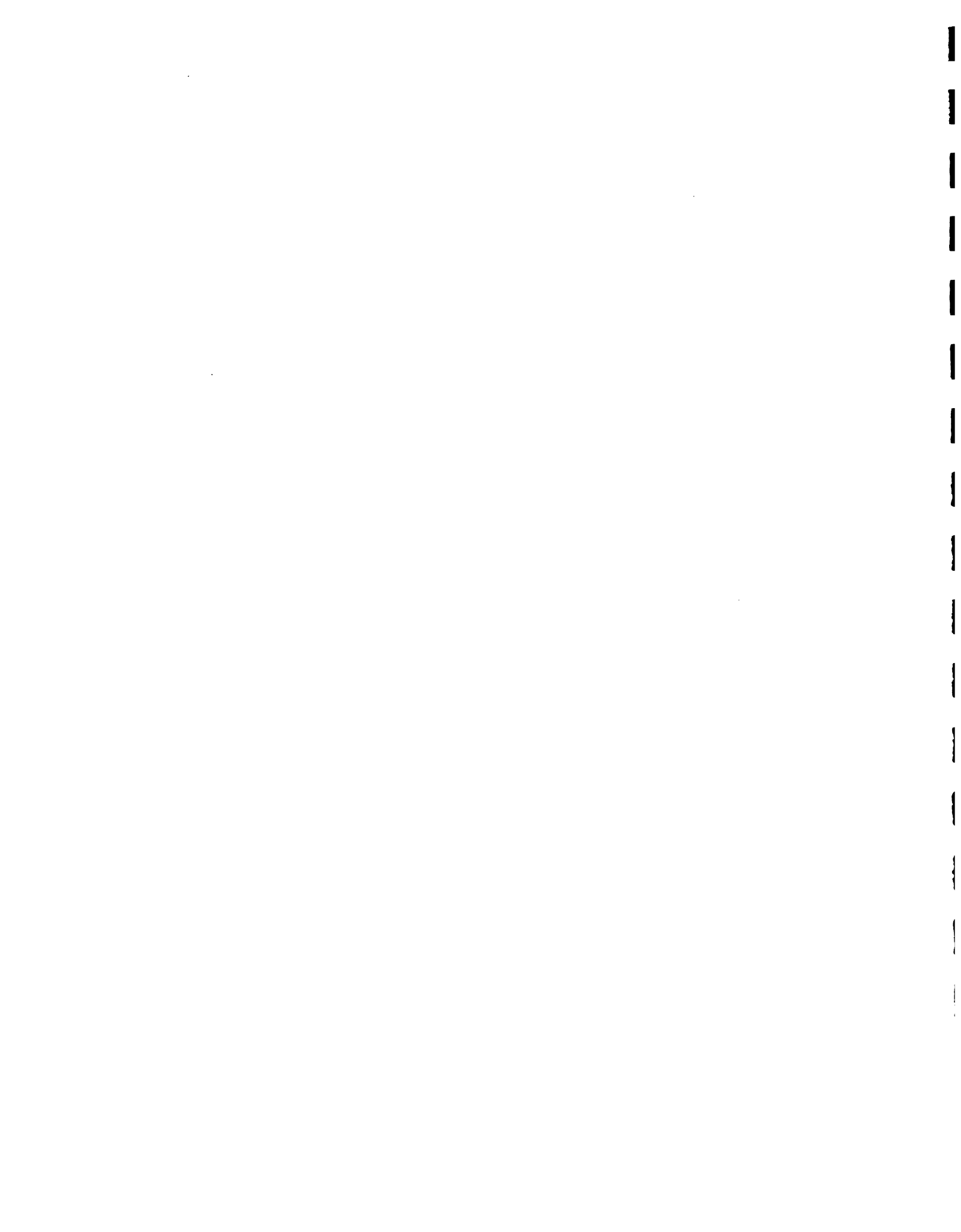


A. ABATTOIR EQUIPMENT

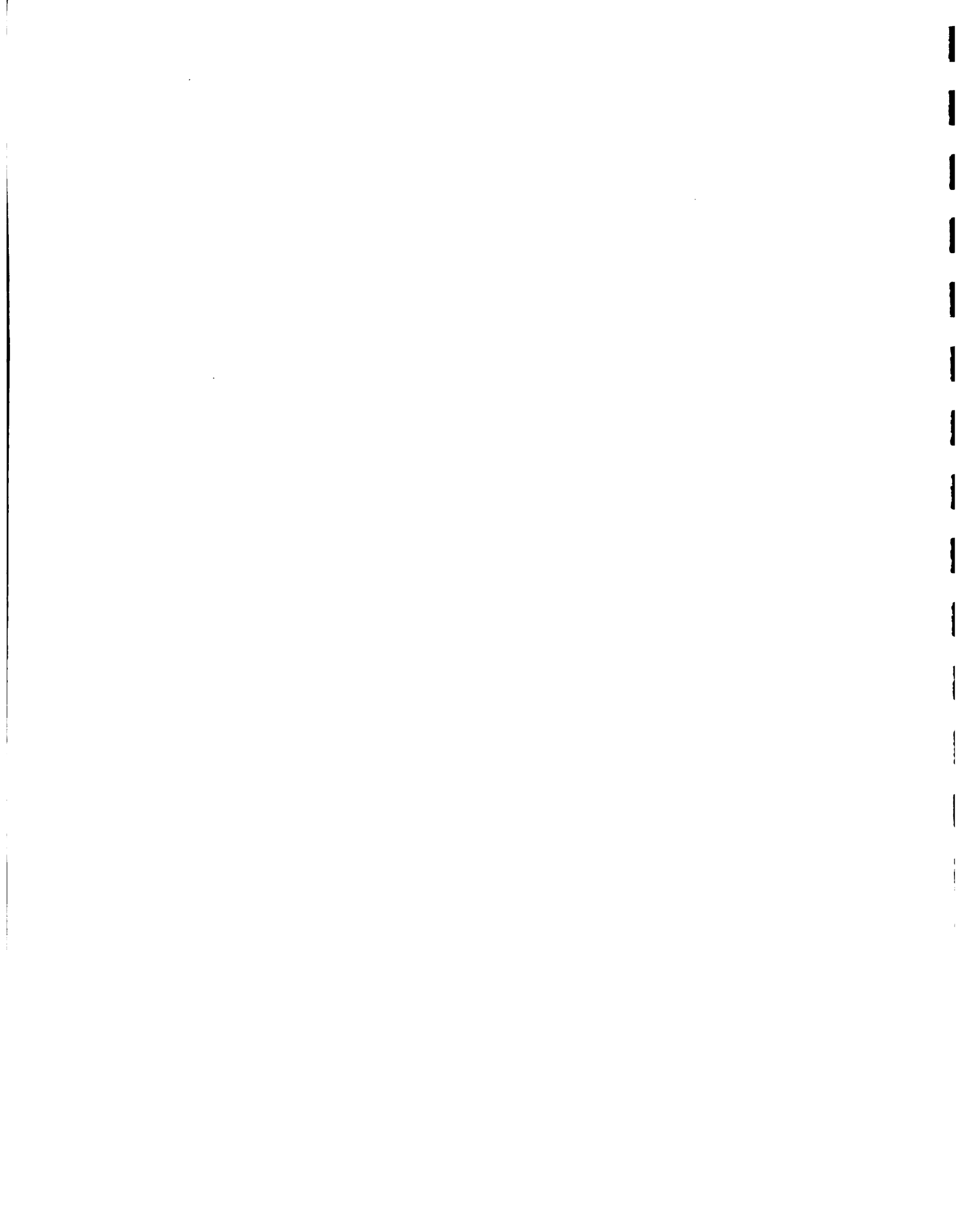
<u>QUANTITY</u>	<u>DESCRIPTION</u>	<u>COST U.S.\$</u>
1	4' X 7' livestock platform scale, suspended, with 1000 kg beam, in kg.	5520
3	Electric prods, PARMAK #64111 w/batteries	165
1	Cattle knocking box with head restrainer, mechanically operated.	4140
2	MATADOR 65 BC STUNNERS	531
-	Spare parts for Abattoir	276
5000	Rounds blank charges for Abattoir	431
1	Electric beef hoist	3450
1	Landing devisor	1242
1	Beef hoist for dropping cattle DEMAG 1000 kg.	1518
2	Beef cradles on wheels, strain. Steel (S.S.)	1242
1	Set wheels for "10"	131
1	Elevator platform for dropping, air-operator	1380
1	Beef hoist, DEMAG 1000 kg, 20 St/chain	1518
1	Beef saw, KENTMASTER #151, c/w counter weight	2518
1	Beef and hog splitting saw, KENTMASTER #75 complete with counter-weight	1776
-	Spare parts for beef and hog trolleys and manual scribe saw	345
1	Beef single rail lander, S.S. hooks	207
2	Beef spreaders, S.S.	165
1	Work bench for saw, two levels, pipe and angle iron frame with railing ..... street surf galv after fab. 3' -4" X 2' -6" X 2' -6"	448



<u>QUANTITY</u>	<u>DESCRIPTION</u>	<u>COST U.S.\$</u>
1	Work bench for washing, two levels, pipe and angle frame, with rail grip street surface galvanise after fabrication 3' -4" X 2' 6 X 2' -6"	448
1	Rail Scale, 1000 kg with dial	2760
-	Beef bleeding rail 6" x 4" x 3/8 tube, 10" hangers, 1" x 2½" flat bar, support rods & bracing	483
4	Beef Shackles	634
600	7 lbs beef & hog trolleys, oilite bushings and stainless steel	6375
1	Manual Scribe Saw	127
2	Paunch trucks with pluck pan, all galvanise except Stainless Steel pan.	1255
-	Beef washing hose and nozzle	86
1	Head wash cabinet 30" X 30" X 5' -6", ½Stainless Steel hook, 12 galvanise steel frame galvanise after fabrication 4" drain	703
10	White plastic blood pails. 20 l.	207
1	Head inspection table 30" X 30" X 28" high, tube frame, sanitary plastic top, two Stainless Steel ½" rod head supports galvanise after fabrication	493
1	blood pail storage rack, galvanise after fabrication	172
-	Beef eviscerating rail, 4" X 4" X 1/8" tube, 10" hangers, 3/8" X 2½" flat bar, galvanise after fabrication 38 feet \$12.83 foot	483
1	Hog Bleeding Conveyor	10350
1	Hog Scalding	4140
1	Hog dehairer	8280
1	Hog gambrelling with bench and drop chute, galvanise after fabrication	828

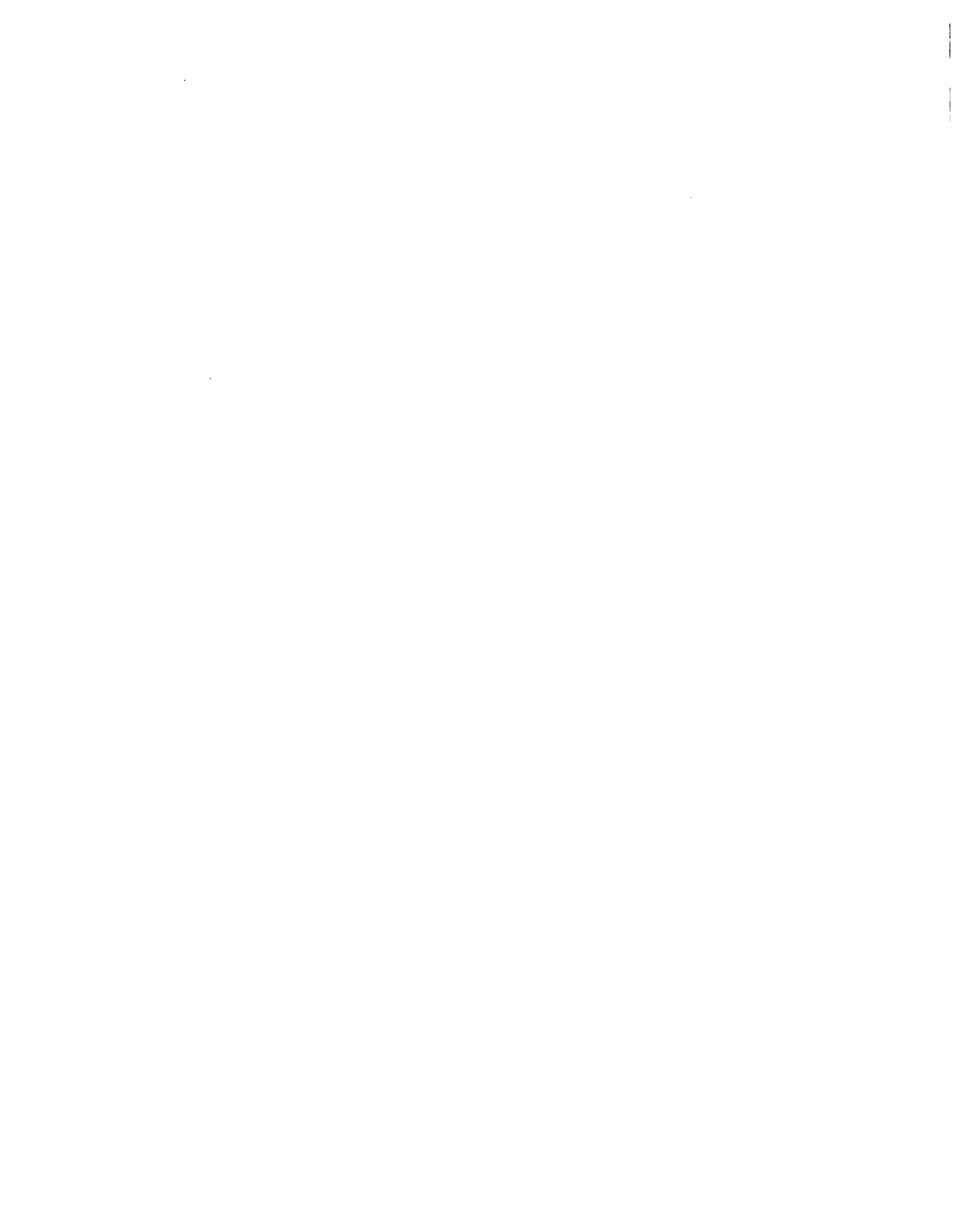


<u>QUANTITY</u>	<u>DESCRIPTION</u>	<u>COST U.S.\$</u>
1	Hog head stationary hair singering	396
1	Hog scraping bench, 6' -0" X 2' -6". 2 level pipe and angle frame with guard rail, grip strut surface galvanise after fabrication	621
-	Hog eviscerating rail 4" X 4" X 1/8" tube, 10" hangers 3/8" X 2 1/2", flat bar, galvanise, after fabrication 68 feet @ C \$8.60/ft.	872
300	gambrels galvanized @ \$5.82	1656
4	"o" rings for trolleys, stainless steel	260
1	Rail scale (Hog & small stock) 1000 Kg with dial	2760
1	Electric hoist, 500 Kg, DEMAG complete with I-beam trolley and controls (for small stock)	1293
1	I-beam for electric hoist	345
1	Skinning rack, galv. after fabrication with Stainless Steel hook	552
-	Small stock eviscerating rail, 4" X 4" X 1/8" tube 10" hangers, 3/8" X 2 1/2" flat bar, galv. after fabrication complete with hangers and braces 20 Lt 12.83 \$/Lt	256
25	Small stocks hanging trees, Stainless Steel hooks	862
3	Stainless Steel lavatories with Knee operation	1097
4	knife sterilizers Stainless Steel; 3/4" drain, 4" X 10" X 10"	483
6	Hog scraper 13.80	82
1	Hand scraper 25.000 btu	310
1	High Pressure washing machine	2967
1	tumbler for trolleys	1380
2	Clean-up 1/2 Ø hoses 50 Lt with quick couple and nozzle	151
1	Viscera and paunch inspection table and chutes 30" X 5' -0", Stainless Steel top, galv. pipe frame	586

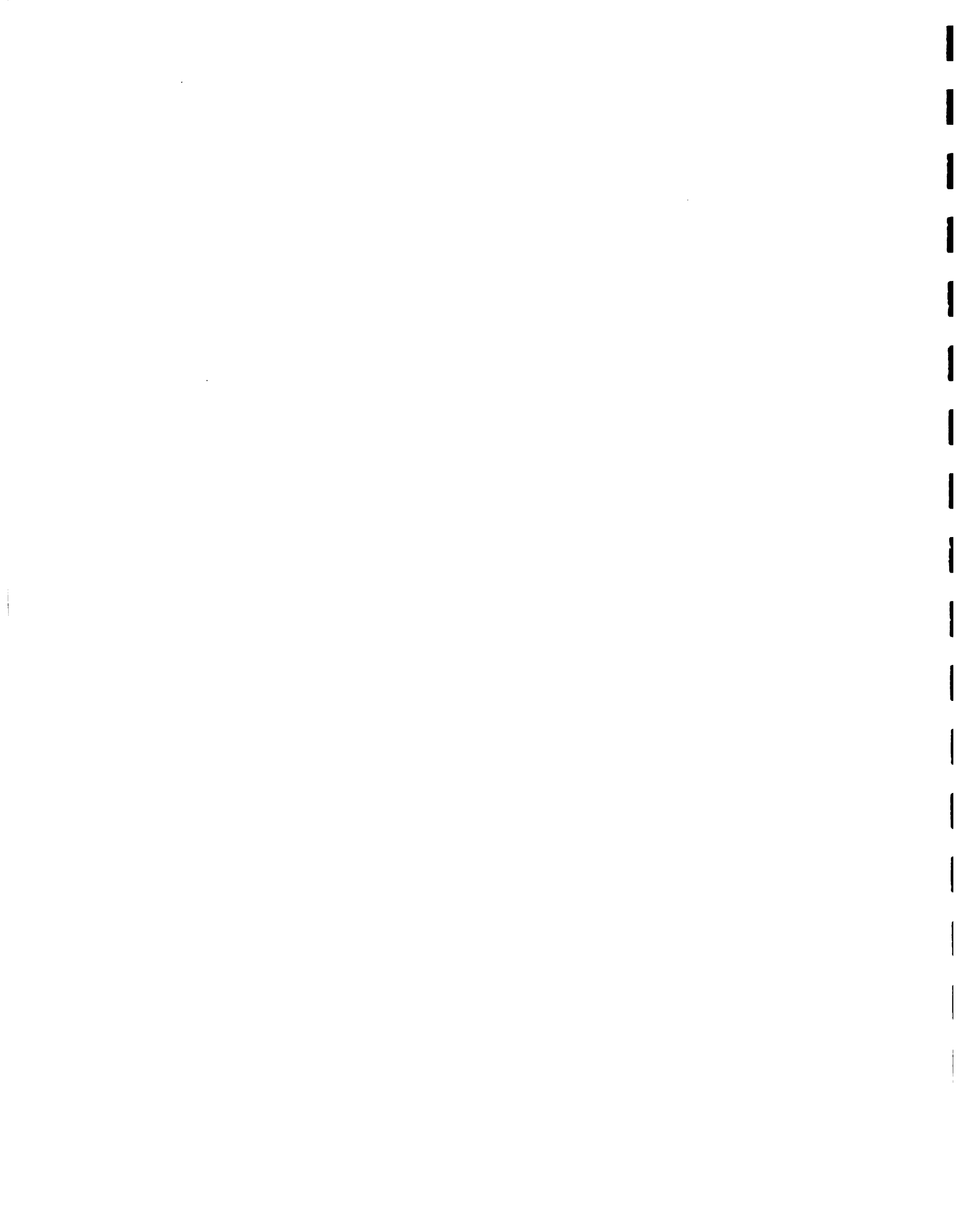




<u>QUANTITY</u>	<u>DESCRIPTION</u>	<u>COST U.S.\$</u>
1	Stomach opening table, chute and screw conveyor, 3' -4" X 3' -4" X 3' -4", stainless steel top, 18" X 3' -4" chute with grate, 8' X 8" Ø serew conveyor and drive.	1380
1	Viscera cleaning table 10' X 3' -4" X 2' -6" Stainless Steel top, pipe legs galv., 3 rigid pipes, 1½" Ø drain inserter	1104
1	Umbrella-type tripe washer, Stainless Steel 54" Ø X 4'-0" high	1000
-	Hog, small stock and beef cooler rails including supporting structural steel frame, 4" X 4" X 1/8" tubing, hangers, 3/8" X 2½" railing, switches, etc. galv. after fab. 800 Lt 14.49 \$/Lt.	11592
	Hog small stock and beef railing in boning room and one dack including tubing langers railing, switches, supports and bracing galv. after fabric. 70 Lt 18.60 /Lt.	897
2	Toledo bench scale 150 Kgs. cap. in 0.25 Kg. divisions dial	2208
2	Scale benches galv. after Lab.	138
2	Baning and Cutting tables, Stainless Steel top with cutting board, 10' -0" X 42" X 34" high adjust legs, 10" back 14 ga Stainless Steel type 304	1587
4	Liver hanging trucks, 60" X 30", No Stainless Steel Hooks 2 - 10" Ø wheels and 2 -6" Ø swivel wheels galv. frame	3919
4	Stainless steel frame shelf trucks, 6 levels 27" X 20" X 57" high. Capacity 800 lbs., 5" Ø wheels	897
24	Nylon pans for \$65, 15½" X 26½ X 5" deep	331
100	Cutting, skinning and borning knives	966
10	Sheels	186
20	Knives holders	138
1	Rotary stone knife sharpener	690
1	All purpose truck, 45" X 22", 9" bed height, 35" handle heigy, galvanized	172



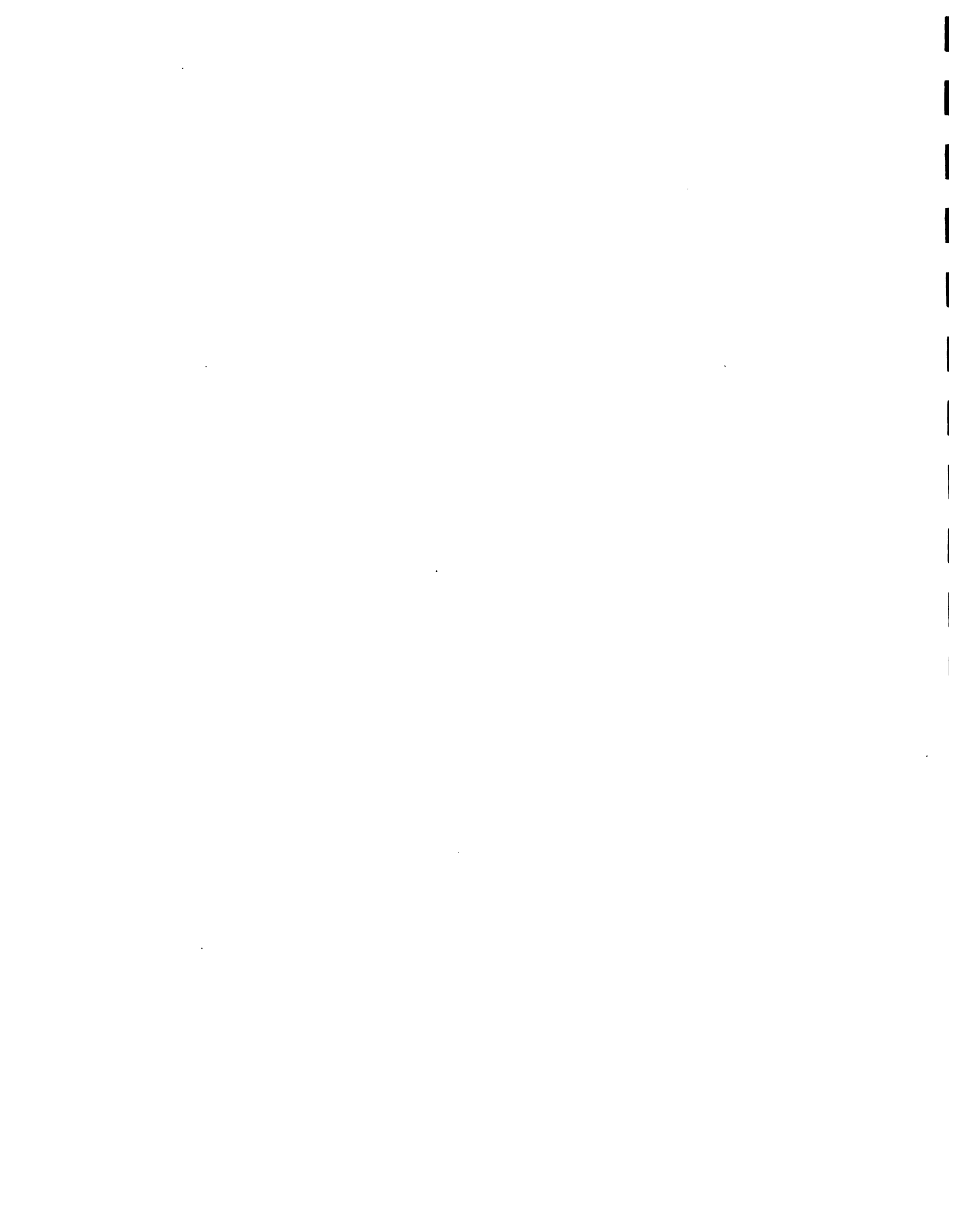
<u>QUANTITY</u>	<u>DESCRIPTION</u>	<u>COSTO U.S.\$</u>
2	Drum trucks	56
6	Square garbage receptacles @ \$31.05	186
6	Round track drums, molded poly @ \$13.80	82
4	Aluminum shovels @ \$13.80	55
4	Squeegee @ \$24.15	96
4	Breams @ \$24.15	96
4	Brushes @ \$3.45	13
3	Casing Flushing automatic shut-off valves	144
6	Hand Meat Saws @ \$48.30	289
24	Meat Saw Blades @ \$3.45	82
-	Lases Lite 3/32" white, pearl finish 4828 @ 1.28	6210
-	Miscellaneous 15%	17250
	<u>Installation</u>	
-	Miscellaneous installation materials	5520
-	Tools for installation (to remain)	8280
-	Travelling costs - 2 men	
-	- Airline tickets	1104.00
-	- Travelling time	828.00
-	- 4 days \$270.00	
-	- Travelling expenses	138.00
		2070
-	Installation costs	
-	- labour	
	6 wks X 6 days X \$207 =	7452.00
-	- Room & board	
	6 wks X 7 days X \$103.50 =	4347.00
-	- Other expenses	
	42 days X \$13.80 =	579.60
		<u>12378</u>
		161768
	Transportation	<u>20700</u>
		<u>182468</u>



**BARBADOS**  
**INTEGRATED LIVESTOCK PROJECT**  
**PERSONNEL COSTS OF ABATTOIR AND SERVICE CENTERS**  
 ('000 B'dos \$)

CONCEPT	NUMBER	ANNUAL SALARY	TOTAL
<b>I. ABATTOIR COMPLEX</b>			<b>637.0</b>
<b>A. Staff personnel</b>			
<b>1. office</b>			<b>204.0</b>
manager	1	60.0	60.0
accountant	1	50.0	50.0
livestock purchases	1	30.0	30.0
salesperson	1	30.0	30.0
secretary	1	20.0	20.0
receptionist/typist	1	14.0	14.0
<b>2. plant</b>			<b>123.0</b>
superintendent	1	30.0	30.0
foremen	3	17.0	51.0
clerc	3	14.0	42.0
<b>B. Plant personnel</b>			
<b>1. receiving and security</b>			<b>78.0</b>
livestock receiver	1	15.0	15.0
watchmen	3	12.0	36.0
driver	1	12.0	12.0
mechanic	1	15.0	15.0
<b>2. plant operation</b>			<b>232.0</b>
killing department	8	17.0	136.0
viscera department	3	17.0	51.0
cooler operator	1	15.0	15.0
cut, bone, packg.	1	15.0	15.0
shipping	1	15.0	15.0
<b>II. SERVICE CENTERS</b>			<b>333.0</b>
manager	3	35.0	105.0
livestock receiver	3	30.0	90.0
clerc	6	16.0	96.0
typist	3	14.0	42.0
<b>III. TOTAL</b>			<b>970.0</b>

SOURCE: IICA/MAHR-I.L.P.

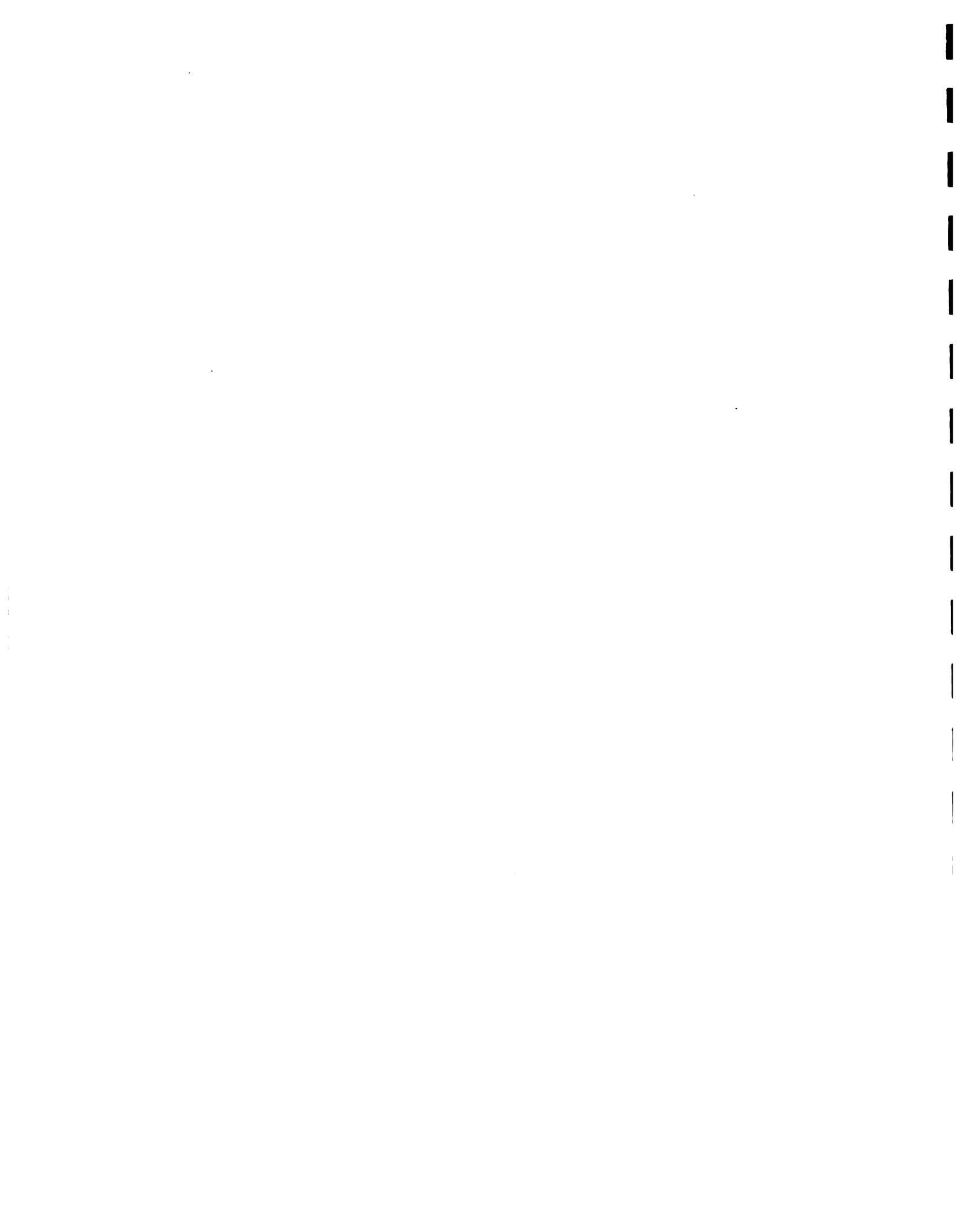


BARBADOS  
INTEGRATED LIVESTOCK PROJECT  
TABLE 1  
ABATTOIR COMPLEX  
SOURCES AND USES OF FUNDS  
( '000 B'dos \$)

CONCEPT	1	2	3	4	5	6	7	8	9	10
SOURCES OF FUNDS	0.0	21778.2	23572.0	26654.3	30043.2	31573.0	31952.8	31952.8	31952.8	31952.8
1. SALES	0.0	21778.2	23572.0	26654.3	30043.2	31573.0	31952.8	31952.8	31952.8	31952.8
beef		5460.1	6009.9	6490.5	6532.1	6932.1	6932.1	6932.1	6932.1	6932.1
mutton		2598.3	3201.8	3959.7	5636.8	6265.1	6265.1	6265.1	6265.1	6265.1
pork		13112.6	13112.6	13112.6	13112.6	13112.6	13112.6	13112.6	13112.6	13112.6
feeds		607.2	1247.7	3091.5	4361.7	5263.2	5643.0	5643.0	5643.0	5643.0
2. REIMBURSEMENTS FOR ANIMALS		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
cattle										
sheep										
USES OF FUNDS	2410.0	19869.9	21571.4	24386.9	27449.4	28857.8	29218.6	29218.6	29218.6	29218.6
1. INVESTMENTS	2410.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
abattoir	2200.0									
service centers	210.0									
2. OPERATIONAL COSTS	0.0	19869.9	21571.4	24386.9	27449.4	28857.8	29218.6	29218.6	29218.6	29218.6
purchase of animals		18238.2	19313.5	20372.0	22226.8	22778.8	22778.8	22778.8	22778.8	22778.8
operational expenditures		1054.8	1072.5	1078.0	1079.0	1079.0	1079.0	1079.0	1079.0	1079.0
operational exp. serv. centers		576.8	1185.3	2936.9	4143.6	5000.0	5360.9	5360.9	5360.9	5360.9
BALANCE BEFORE DEBT SERVICE	-2410.0	1908.3	2000.6	2267.4	2593.8	2715.2	2734.2	2734.2	2734.2	2734.2
1. CREDIT OPERATION	2193.1	-602.3	-655.8	-836.9	-937.3	-994.5	-1014.3	-1014.3	-1014.3	-1014.3
LOANS										
investment loan	2410.0									
operating capital		3503.9	3990.3	5043.5	5956.1	6476.3	6656.7	6656.7	6656.7	6656.7
DEBT SERVICE										
long term	216.9	216.9	216.9	282.1	282.1	282.1	282.1	282.1	282.1	282.1
short term		3889.4	4429.3	5598.2	6611.3	7188.7	7389.0	7389.0	7389.0	7389.0
CASH FLOW	-216.9	1306.0	1344.8	1430.5	1656.5	1720.7	1719.8	1719.8	1719.8	1719.8

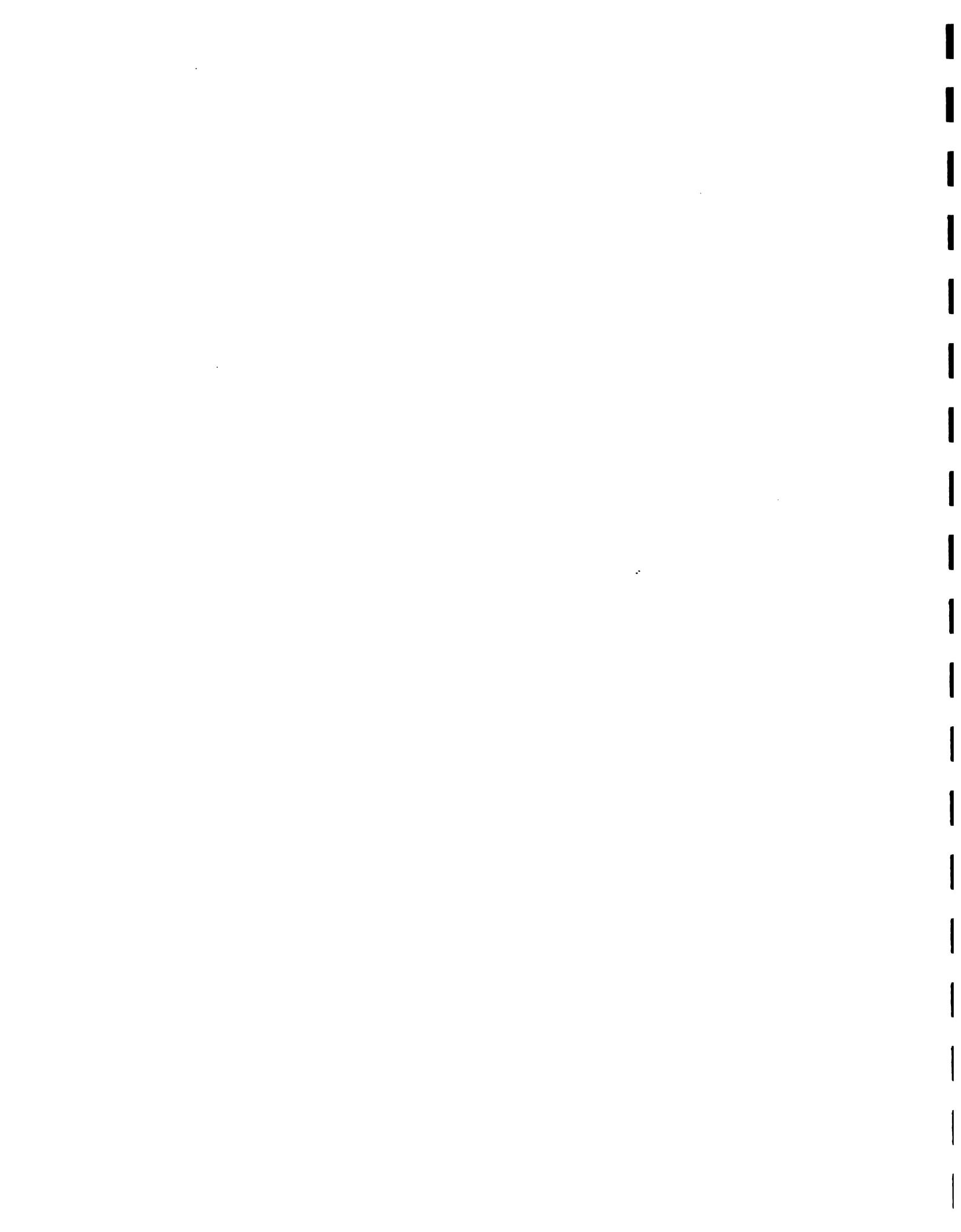
SOURCE: IICA/MANR-I.L.P.

NPV BEFORE DEBT SERVICE @ 12% = 14263.379









INTEGRATED LIVESTOCK PROJECT  
TABLE 2  
ABATTOIR COMPLEX  
ESTIMATED TOTAL INCOME

CONCEPT	1	2	3	4	5	6	7-20
CATTLE (total value '000 B\$)		5460.1	6009.9	6490.5	6932.1	6932.1	6932.1
Total kg meat		615969	678092	732438	782353	782353	782353
Total hides		2338	2576	2786	2978	2978	2978
Total kg offals		289006	317676	342580	365540	365540	365540
SHEEP (total value '000 B\$)		2598.3	3201.8	3959.7	5636.8	6265.1	6265.1
Total meat value ('000 B \$)		2283.3	2843.6	3558.3	5149.0	5734.1	5734.1
Total hides		17500	19900	22300	27100	29500	29500
Total kg offals		131250	149250	167250	203250	221250	221250
HOGS (total value '000 B\$)		13112.6	13112.6	13112.6	13112.6	13112.6	13112.6
Total kg meat		2045455	2045455	2045455	2045455	2045455	2045455
Total kg offals		614	614	614	614	614	614
GRAND TOTAL ('000 B\$)		21171.0	22324.3	23562.8	25681.5	26309.8	26309.8

SOURCE: IICA/MANR-I.L.P.



**BARBADOS**  
**INTEGRATED LIVESTOCK PROJECT**  
**TABLE 3**  
**ABATTOIR COMPLEX**  
**ESTIMATED EXPENDITURES ON ANIMALS**

CONCEPT	1	2	3	4	5	6	7-20
<b>CATTLE</b>							
Number of heifers		396	450	522	576	576	576
Number of steers		1089	1221	1320	1419	1419	1419
Number of culled cows		853	905	944	983	983	983
Total expenditures		4358.7	4813.6	5214.5	5581.3	5581.3	5581.3
Total tons		614.7	676.7	730.9	780.7	780.7	780.7
<b>SHEEP</b>							
Number of sheep		17500	19900	22300	27100	29500	29500
Total expenditures		1879.5	2499.9	3157.5	4645.5	5197.5	5197.5
Total tons		262.5	358.2	446.0	623.3	678.5	678.5
<b>HOGS</b>							
Number of hogs		30000	30000	30000	30000	30000	30000
Total expenditures		12000.0	12000.0	12000.0	12000.0	12000.0	12000.0
Total tons		2038.6	2038.6	2038.6	2038.6	2038.6	2038.6
<b>GRAND TOTAL</b>		<b>18238.2</b>	<b>19313.5</b>	<b>20372.0</b>	<b>22226.8</b>	<b>22778.8</b>	<b>22778.8</b>

SOURCE: IICA/MANR-I.L.P.



**BARBADOS**  
**INTEGRATED LIVESTOCK PROJECT**  
**TABLE 4**  
**ABATTOIR COMPLEX**  
**ESTIMATED ANNUAL DIRECT COSTS**  
**('000 B'dos \$)**

CONCEPT	2	3	4	5	6	7-20
<b>1. expenditures</b>						
salaries	970.0	970.0	970.0	970.0	970.0	970.0
water	22.0	22.0	22.0	22.0	22.0	22.0
electricity	48.0	60.0	60.0	60.0	60.0	60.0
propane	0.8	1.0	1.0	1.0	1.0	1.0
<b>2. maintenance</b>	3.0	6.0	8.0	9.0	9.0	9.0
<b>3. supplies</b>						
office	1.0	1.5	2.0	2.0	2.0	2.0
production	10.0	12.0	15.0	15.0	15.0	15.0
<b>4. total</b>	<b>1054.8</b>	<b>1072.5</b>	<b>1078.0</b>	<b>1079.0</b>	<b>1079.0</b>	<b>1079.0</b>

SOURCE: IICA/MANF-I.L.P.









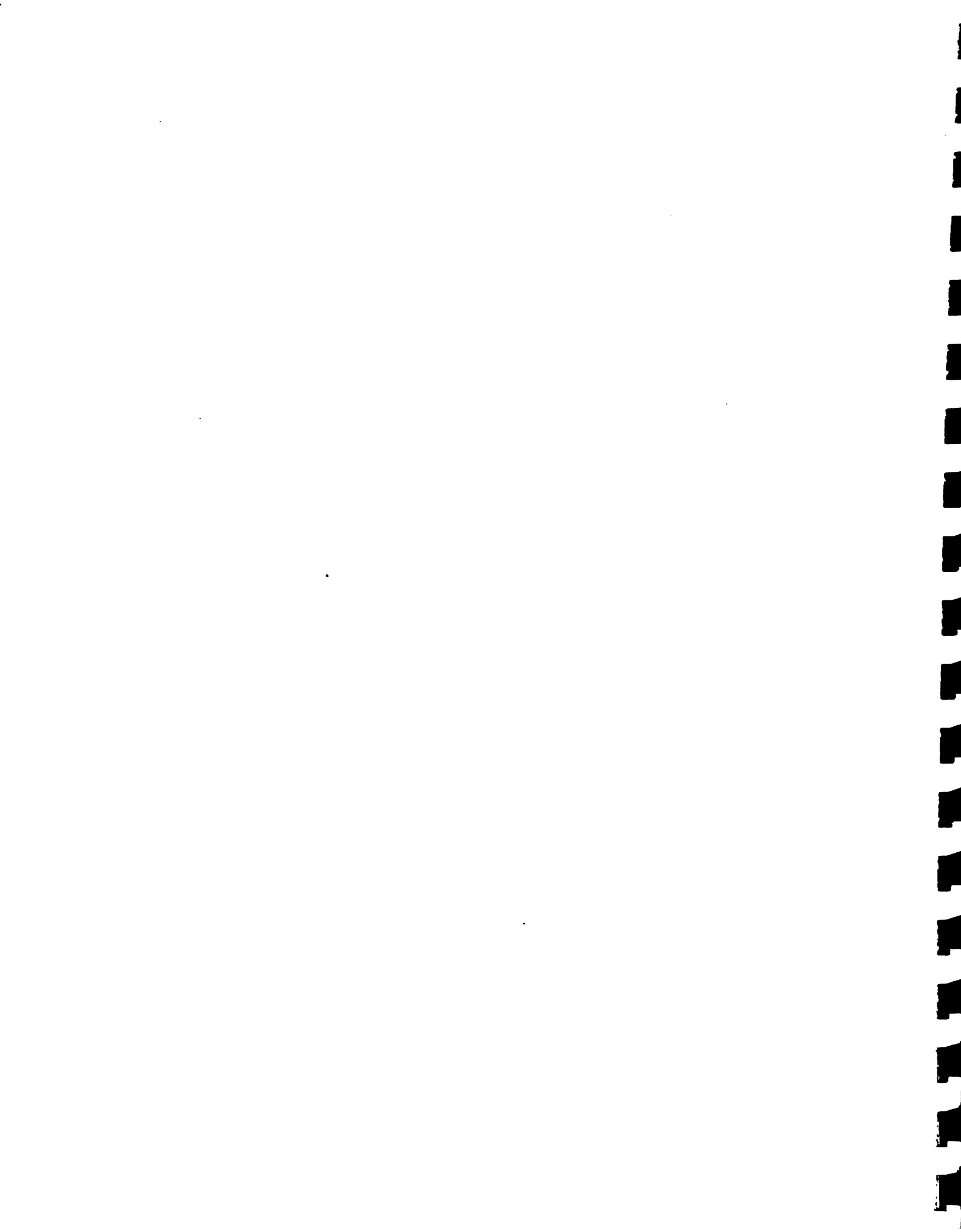
**BARBADOS**  
**INTEGRATED LIVESTOCK PROJECT**  
**TABLE 6**  
**ESTIMATED UNIT COSTS OF ABATTOIR**

CONCEPT	1	2	3	4	5	6	7-20
INVEST. MACHINERY		37.8	37.8	37.8	37.8	37.8	37.8
INVEST. BUILDING		91.3	91.3	91.3	91.3	91.3	91.3
DIRECT COSTS		1054.8	1072.5	1078.0	1079.0	1079.0	1079.0
<b>CATTLE</b>							
1. DEPRECIATION		27.8	29.8	31.0	30.5	29.3	29.3
2. DIRECT COSTS		226.8	247.7	258.7	254.6	244.9	244.9
3. PURCHASE OF ANIMALS		4358.7	4813.6	5214.5	5581.3	5581.3	5581.3
4. TOTAL NUMBER OF ANIMALS		2338	2576	2786	2978	2978	2978
5. COST PER ANIMAL (B'dos \$)		1973.2	1976.4	1975.7	1969.9	1966.3	1966.3
6. TOTAL TONS PRODUCED		614.7	676.7	730.9	780.7	780.7	780.7
7. COST PER KG. (B\$)		7.51	7.52	7.53	7.51	7.50	7.50
<b>SHEEP</b>							
1. DEPRECIATION		51.6	54.5	57.2	62.6	65.3	65.3
2. DIRECT COSTS		421.9	452.6	477.6	523.3	546.4	546.4
3. PURCHASE OF ANIMALS		1585.5	2331.4	3081.5	4645.5	5197.5	5197.5
4. TOTAL NUMBER		17500	19900	22300	27100	29500	29500
5. COST PER ANIMAL (B'dos \$)		117.7	142.6	162.2	193.0	196.9	196.9
6. TOTAL TONS PRODUCED		265.5	320.1	382.5	521.7	576.9	576.9
7. COST PER KG. (B\$)		7.76	8.87	9.45	10.03	10.07	10.07
<b>PORK</b>							
1. DEPRECIATION		51.0	47.4	44.4	40.0	38.3	38.3
2. DIRECT COSTS		416.6	393.6	370.8	334.5	320.5	320.5
3. PURCHASE OF ANIMALS		12000	12000	12000	12000	12000	12000
4. TOTAL NUMBER		30000	30000	30000	30000	30000	30000
5. COST PER ANIMAL (B'dos \$)		415.6	414.7	413.8	412.5	412.0	412.0
6. TOTAL TONS PRODUCED		2038.6	2038.6	2038.6	2038.6	2038.6	2038.6
7. COST PER KG. (B\$)		6.12	6.10	6.09	6.07	6.06	6.06

SOURCE: IICA/MANR-I.L.P.

**ASSUMPTIONS:**

- 20 YEARS LINEAR DEPRECIATION FOR BUILDINGS
- 10 YEARS LINEAR DEPRECIATION FOR MACHINERY



BARBADOS  
INTEGRATED LIVESTOCK PROJECT

TABLE 7

ABATTOIR COMPLEX

PROPORTION OF ANIMALS FOR FIXED COSTS SLAUGHTER

CONCEPT	1	2	3	4	5	6	7-20
<b>CATTLE</b>							
Number of heifers		396	450	522	576	576	576
Number of steers		1089	1221	1320	1419	1419	1419
Number of culled cows		853	905	944	983	983	983
Total number of animals		2338	2576	2786	2978	2978	2978
<b>SHEEP</b>							
Number of sheep		17500	19900	22300	27100	29500	29500
Cow equivalent (1)		4350	5174	5798	7046	7670	7670
<b>HOGS</b>							
Number of hogs		30000	30000	30000	30000	30000	30000
Cow equivalent (2)		4500	4500	4500	4500	4500	4500
<b>GRAND TOTAL (COW-EQUIVALENT)</b>		<b>11388</b>	<b>12250</b>	<b>13084</b>	<b>14524</b>	<b>15148</b>	<b>15148</b>
<b>PROPORTION COWS</b>		<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>
<b>PROPORTION OF SHEEP</b>		<b>0.4</b>	<b>0.4</b>	<b>0.4</b>	<b>0.5</b>	<b>0.5</b>	<b>0.5</b>
<b>PROPORTION OF PORK</b>		<b>0.4</b>	<b>0.4</b>	<b>0.3</b>	<b>0.3</b>	<b>0.3</b>	<b>0.3</b>

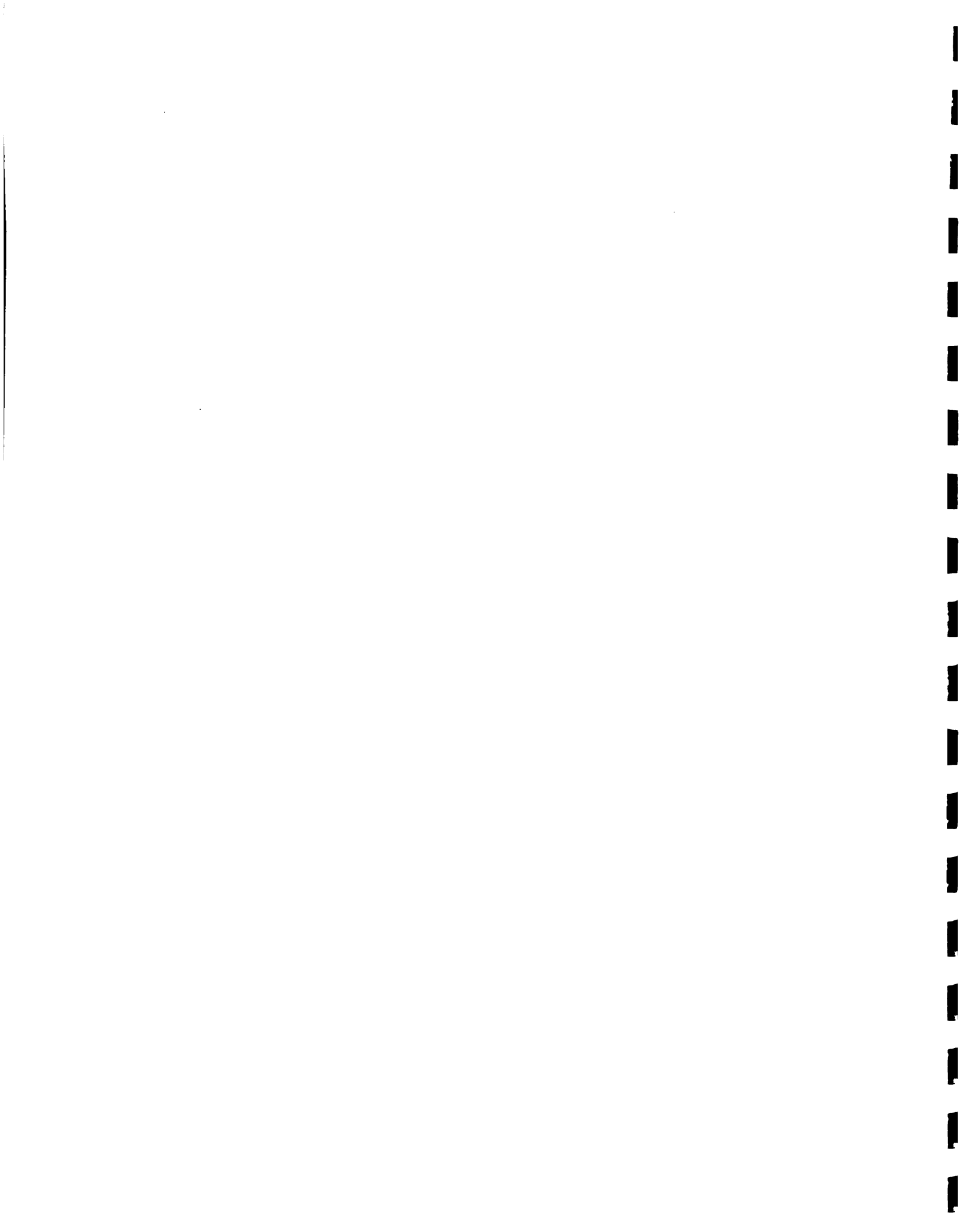
SOURCE: IICA/MANR-I.L.P.

Equivalence based on number of animals slaughtered per hour:

cows: 6/6 = 1

sheep: 6/23 = .26

hogs: 6/41 = .15



**BARBADOS**  
**INTEGRATED LIVESTOCK PROJECT**  
**TABLE B**  
**ESTIMATED THROUGHPUT OF ABATTOIR**  
**AND HOUR REQUIREMENTS**

CONCEPT	1	2	3	4	5	6-20
<b>CATTLE</b>						
Number of cattle		2338	2576	2786	2978	2978
Average number per week		47	52	56	60	60
Average hours/week (1)		8	9	9	10	10
<b>SHEEP</b>						
Number of sheep		17500	19900	22300	27100	29500
Average number per week		350	398	446	542	590
Average hours/week (2)		15	17	19	24	26
<b>HOGS</b>						
Number of hogs		30000	30000	30000	30000	30000
Average number per week		600	600	600	600	600
Average hours/week (3)		15	15	15	15	15

SOURCE: IICA/MANR-I.L.P.

- (1) Assuming 6 animals per hour
- (2) Assuming 23 animals per hour
- (3) Assuming 41 animals per hour





**BARBADOS**  
**INTEGRATED LIVESTOCK PROJECT**  
**TABLE 9**  
**ABATTOIR COMPLEX**  
**SOURCES AND USES OF FUNDS**  
 ('000 B'dos \$)

ASSUMES 10 % DECREASE IN THE PRICE OF

CONCEPT	1	2	3	4	5	6	7	8	9	10
<b>SOURCES OF FUNDS</b>	0.0	19735.2	20939.9	23264.9	25023.9	25968.6	26348.4	26348.4	26348.4	26348.4
1. SALES	0.0	19735.2	20939.9	23264.9	25023.9	25968.6	26348.4	26348.4	26348.4	26348.4
beef		4976.6	5477.6	5915.6	6318.0	6318.0	6318.0	6318.0	6318.0	6318.0
mutton		2370.0	2413.2	2456.4	2542.8	2586.0	2586.0	2586.0	2586.0	2586.0
pork		11801.5	11801.5	11801.5	11801.5	11801.5	11801.5	11801.5	11801.5	11801.5
feeds		607.2	1247.7	3091.5	4361.7	5263.2	5643.0	5643.0	5643.0	5643.0
2. REIMBURSEMENTS FOR ANIMALS		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
cattle										
sheep										
<b>USES OF FUNDS</b>	2410.0	19869.9	21571.4	24386.9	27449.4	28857.8	29218.6	29218.6	29218.6	29218.6
1. INVESTMENTS	2410.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
abattoir	2200.0									
service centers	210.0									
2. OPERATIONAL COSTS	0.0	19869.9	21571.4	24386.9	27449.4	28857.8	29218.6	29218.6	29218.6	29218.6
purchase of animals		18238.2	19313.5	20372.0	22226.8	22778.8	22778.8	22778.8	22778.8	22778.8
operational expenditures		1054.8	1072.5	1078.0	1079.0	1079.0	1079.0	1079.0	1079.0	1079.0
operational exp. serv. centers		576.8	1185.3	2936.9	4143.6	5000.0	5360.9	5360.9	5360.9	5360.9
BALANCE BEFORE DEBT SERVICE	-2410.0	-114.7	-631.4	-1122.1	-2425.5	-2889.2	-2870.2	-2870.2	-2870.2	-2870.2
1. CREDIT OPERATION	2193.1	-602.3	-655.8	-836.9	-937.3	-994.5	-1014.3	-1014.3	-1014.3	-1014.3
<b>LOANS</b>										
investment loan	2410.0									
operating capital		3503.9	3990.3	5043.5	5956.1	6476.3	6656.7	6656.7	6656.7	6656.7
<b>DEBT SERVICE</b>										
long term	216.9	216.9	216.9	282.1	282.1	282.1	282.1	282.1	282.1	282.1
short term		3889.4	4429.3	5598.2	6611.3	7188.7	7389.0	7389.0	7389.0	7389.0
CASH FLOW	-216.9	-717.0	-1287.3	-1958.9	-3362.8	-3883.7	-3884.6	-3884.5	-3884.5	-3884.5

SOURCE: IICA/MANR-I.L.P.  
 NPV BEFORE DEBT SERVICE @ 12% = -15884







BARBADOS  
INTEGRATED LIVESTOCK PROJECT  
TABLE 10  
ABATTOIR COMPLEX  
SOURCES AND USES OF FUNDS  
( '000 B'dos \$)

ASSUMING A DECREASE OF 10% IN CATTLE THR

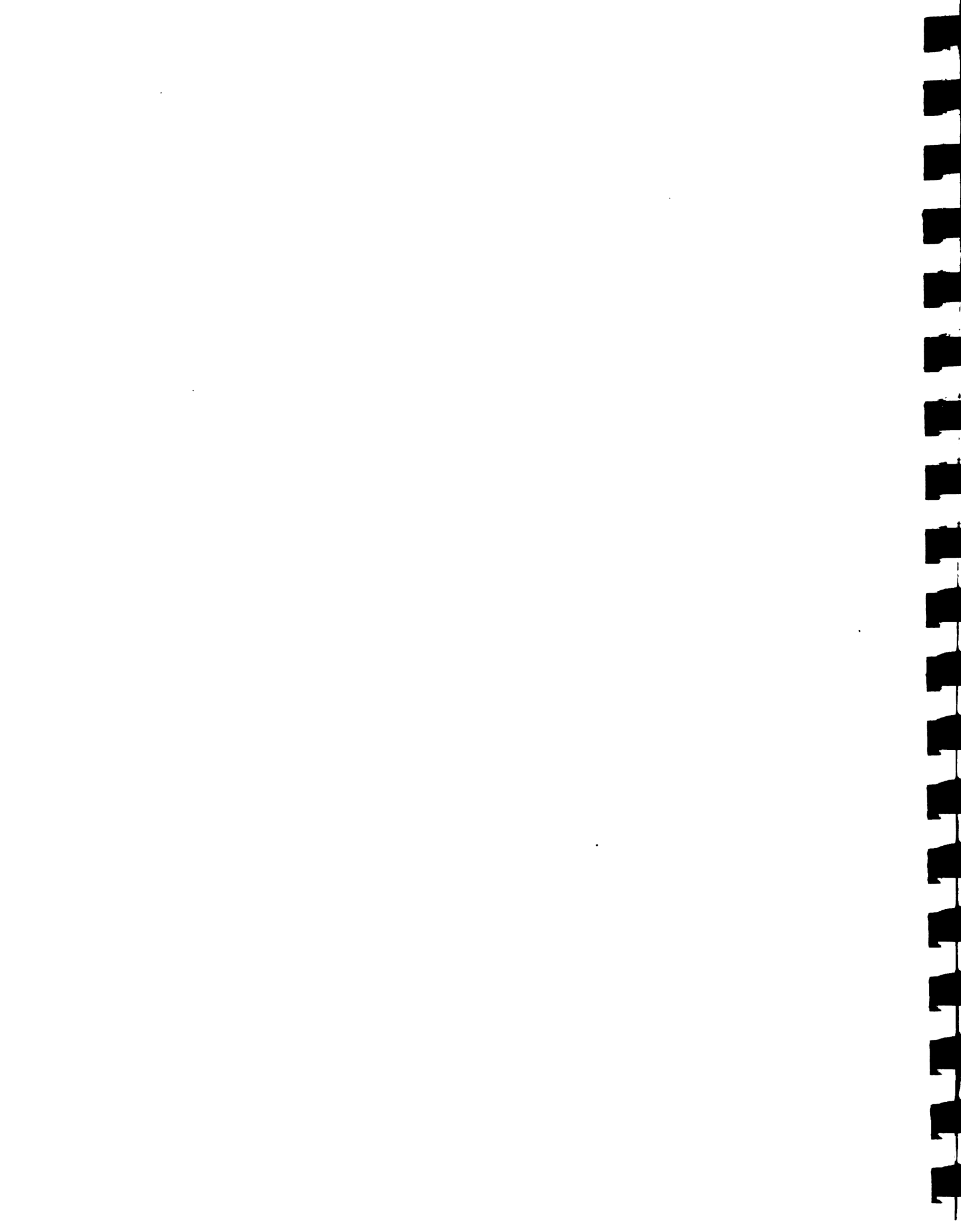
CONCEPT	1	2	3	4	5	6	7	8	9	10
SOURCES OF FUNDS	0.0	21232.2	22971.0	26005.3	29350.0	30879.8	31259.6	31259.6	31259.6	31259.6
1. SALES	0.0	21232.2	22971.0	26005.3	29350.0	30879.8	31259.6	31259.6	31259.6	31259.6
beef		4914.1	5408.9	5841.5	6238.9	6238.9	6238.9	6238.9	6238.9	6238.9
mutton		2598.3	3201.8	3959.7	5636.8	6265.1	6265.1	6265.1	6265.1	6265.1
pork		13112.6	13112.6	13112.6	13112.6	13112.6	13112.6	13112.6	13112.6	13112.6
feeds		607.2	1247.7	3091.5	4361.7	5263.2	5643.0	5643.0	5643.0	5643.0
2. REIMBURSEMENTS FOR ANIMALS		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
cattle										
sheep										
USES OF FUNDS	2410.0	19869.9	21571.4	24386.9	27449.4	28857.8	29218.6	29218.6	29218.6	29218.6
1. INVESTMENTS	2410.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
abattoir	2200.0									
service centers	210.0									
2. OPERATIONAL COSTS	0.0	19869.9	21571.4	24386.9	27449.4	28857.8	29218.6	29218.6	29218.6	29218.6
purchase of animals		18238.2	19313.5	20372.0	22226.8	22778.8	22778.8	22778.8	22778.8	22778.8
operational expenditures		1054.8	1072.5	1078.0	1079.0	1079.0	1079.0	1079.0	1079.0	1079.0
operational exp. serv. centers		576.8	1185.3	2936.9	4143.6	5000.0	5360.9	5360.9	5360.9	5360.9
BALANCE BEFORE DEBT SERVICE	-2410.0	1362.3	1399.6	1618.3	1900.6	2022.0	2041.0	2041.0	2041.0	2041.0
1. CREDIT OPERATION	2193.1	-602.3	-655.8	-836.9	-937.3	-994.5	-1014.3	-1014.3	-1014.3	-1014.3
LOANS										
investment loan	2410.0									
operating capital		3503.9	3990.3	5043.5	5956.1	6476.3	6656.7	6656.7	6656.7	6656.7
DEBT SERVICE										
long term	216.9	216.9	216.9	282.1	282.1	282.1	282.1	282.1	282.1	282.1
short term		3889.4	4429.3	5598.2	6611.3	7188.7	7389.0	7389.0	7389.0	7389.0
CASH FLOW	-216.9	760.0	743.8	781.4	963.3	1027.5	1026.6	1026.6	1026.6	1026.6

SOURCE: IICA/MANR-I.L.P.

NPV BEFORE DEBT SERVICE @ 12% = 9915.5









BARBADOS  
INTEGRATED LIVESTOCK PROJECT  
TABLE 11  
ABATTOIR COMPLEX  
SOURCES AND USES OF FUNDS  
( '000 B'dos \$)

ASSUMING A 25% DECREASE IN THE PRICE OF

CONCEPT	1	2	3	4	5	6	7	8	9	10
SOURCES OF FUNDS	0.0	21567.8	23338.2	26399.1	29758.5	31279.3	31659.1	5643.0	5643.0	5643.0
1. SALES	0.0	21567.8	23338.2	26399.1	29758.5	31279.3	31659.1	5643.0	5643.0	5643.0
beef		5315.6	5851.1	6319.2	6749.3	6749.3	6749.3			
mutton		2532.7	3127.2	3876.1	5535.2	6154.5	6154.5			
pork		13112.3	13112.3	13112.3	13112.3	13112.3	13112.3			
feeds		607.2	1247.7	3091.5	4361.7	5263.2	5643.0	5643.0	5643.0	5643.0
2. REIMBURSEMENTS FOR ANIMALS		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
cattle										
sheep										
USES OF FUNDS	2410.0	19869.9	21571.4	24386.9	27449.4	28857.8	29218.6	29218.6	29218.6	29218.6
1. INVESTMENTS	2410.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
abattoir	2200.0									
service centers	210.0									
2. OPERATIONAL COSTS	0.0	19869.9	21571.4	24386.9	27449.4	28857.8	29218.6	29218.6	29218.6	29218.6
purchase of animals		18238.2	19313.5	20372.0	22226.8	22778.8	22778.8	22778.8	22778.8	22778.8
operational expenditures		1054.8	1072.5	1078.0	1079.0	1079.0	1079.0	1079.0	1079.0	1079.0
operational exp. serv. centers		576.8	1185.3	2936.9	4143.6	5000.0	5360.9	5360.9	5360.9	5360.9
BALANCE BEFORE DEBT SERVICE	-2410.0	1697.9	1766.9	2012.1	2309.1	2421.5	2440.5	-23575.6	-23575.6	-23575.6
1. CREDIT OPERATION	2193.1	-602.3	-655.8	-836.9	-937.3	-994.5	-1014.3	-1014.3	-1014.3	-1014.3
LOANS										
investment loan	2410.0									
operating capital		3503.9	3990.3	5043.5	5956.1	6476.3	6656.7	6656.7	6656.7	6656.7
DEBT SERVICE										
long term	216.9	216.9	216.9	282.1	282.1	282.1	282.1	282.1	282.1	282.1
short term		3889.4	4429.3	5598.2	6611.3	7188.7	7389.0	7389.0	7389.0	7389.0
CASH FLOW	-216.9	1095.6	1111.0	1175.3	1371.8	1427.0	1426.1	-24590.0	-24590.0	-24590.0

SOURCE: IICA/MANR-I.L.P.

NPV BEFORE DEBT SERVICE @ 12% = -63124.2







**BARBADOS**  
**INTEGRATED LIVESTOCK PROJECT**  
**TABLE 12**  
**ABATTOIR COMPLEX**  
**SOURCES AND USES OF FUNDS**  
 ('000 B'dos \$)  
 ASSUMING A 10% DECREASE IN PORK THROUGH

CONCEPT	1	2	3	4	5	6	7	8	9	10
<b>SOURCES OF FUNDS</b>	0.0	20467.0	22260.7	25343.0	28731.9	30261.7	30641.5	30641.5	30641.5	30641.5
1. SALES	0.0	20467.0	22260.7	25343.0	28731.9	30261.7	30641.5	30641.5	30641.5	30641.5
beef		5460.1	6009.9	6490.5	6932.1	6932.1	6932.1	6932.1	6932.1	6932.1
mutton		2598.3	3201.8	3959.7	5636.8	6265.1	6265.1	6265.1	6265.1	6265.1
pork		11801.3	11801.3	11801.3	11801.3	11801.3	11801.3	11801.3	11801.3	11801.3
feeds		607.2	1247.7	3091.5	4361.7	5263.2	5643.0	5643.0	5643.0	5643.0
2. REIMBURSEMENTS FOR ANIMALS		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
cattle										
sheep										
<b>USES OF FUNDS</b>	2410.0	19869.9	21571.4	24386.9	27449.4	28857.8	29218.6	29218.6	29218.6	29218.6
1. INVESTMENTS	2410.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
abattoir	2200.0									
service centers	210.0									
2. OPERATIONAL COSTS	0.0	19869.9	21571.4	24386.9	27449.4	28857.8	29218.6	29218.6	29218.6	29218.6
purchase of animals		18238.2	19313.5	20372.0	22226.8	22778.8	22778.8	22778.8	22778.8	22778.8
operational expenditures		1054.8	1072.5	1078.0	1079.0	1079.0	1079.0	1079.0	1079.0	1079.0
operational exp. serv. centers		576.8	1185.3	2936.9	4143.6	5000.0	5360.9	5360.9	5360.9	5360.9
<b>BALANCE BEFORE DEBT SERVICE</b>	-2410.0	597.1	689.4	936.1	1282.6	1403.9	1422.9	1422.9	1422.9	1422.9
1. CREDIT OPERATION	2193.1	-602.3	-655.8	-836.9	-937.3	-994.5	-1014.3	-1014.3	-1014.3	-1014.3
<b>LOANS</b>										
investment loan	2410.0									
operating capital		3503.9	3990.3	5043.5	5956.1	6476.3	6656.7	6656.7	6656.7	6656.7
<b>DEBT SERVICE</b>										
long term	216.9	216.9	216.9	282.1	282.1	282.1	282.1	282.1	282.1	282.1
short term		3889.4	4429.3	5598.2	6611.3	7188.7	7389.0	7389.0	7389.0	7389.0
<b>CASH FLOW</b>	-216.9	-5.3	33.5	119.2	345.3	409.4	408.6	408.6	408.6	408.6

SOURCE: IICA/MANR-I.L.P.  
 NPV BEFORE DEBT SERVICE @ 12% = 5639.8









## NOTES ON ENVIRONMENTAL IMPACT OF ABATTOIR

### 1. General Remarks

Abattoirs, if not properly designed and operated, may be the cause of atmospheric pollution as well as pollution of the surface or underground water in the immediate area of the plant.

Atmospheric pollution is generally due to improper or inadequate sanitation procedure which permits the decomposition of animal by products or residues. Care in keeping the plant and its environment clean and free of decomposing materials will produce satisfactory results in this area.

On the other hand, protecting against pollution of the water resources requires not only alertness and care but also proper equipment to remove from the effluent stream the pollutants which, otherwise, could cause considerable damage to the environment.

The quality of the effluent stream returned to the environment can be influenced in two ways by the planners, namely,

- a. by eliminating, when possible, from the effluent stream certain pollutants that would otherwise prove to be particularly detrimental and difficult to eliminate at a later stage. This applies particularly to blood and scraps of animal tissue.
- b. By installing a sewerage treatment system that will reduce the pollutants contained in the effluent to an acceptable level.

We will treat each one of these factors individually detailing to some degree what we feel should be done to avert any detrimental effect to the environment of Barbados.

### 2. Characteristics of the Plant Sewerage Systems

The abattoir will have three different sewer systems, namely,



- a. a rainwater system which, through roof gutters and surface drainage will return the water to the environment without further treatment,
- b. a sanitary system which will pick up all toilets, washroom drains and washbasins and direct the stream to a septic tank and underground absorption field of approved design;
- c. a plant system which will pick-up all contaminated water from plant operating areas such as killing floors, inedible department, viscera process rooms, coolers and meat processing departments. This third system is the one that interests us particularly.

To reduce the load of pollutants in the water stream of the plant system we propose:

- a. to keep all the blood that we can out of the sewer system. Thus the blood will be picked up and transported to the rendering plant where it will be dried and sold as concentrated protein for animal feed,
- b. by making use of proper drains to intercept as much as possible of the meat scraps that would otherwise increase the pollutent load of the effluent stream.

We thus believe that with proper planning and operation of the plant, we should obtain a plant effluent having the following characteristics:

Greases and fats	350 - 800 p.p.m.
BOD 5	500 - 1200 p.p.m.
Solids in suspension	200 - 400 p.p.m.

Based on a production schedule of

- 40 cattle, one day per week
- 288 hogs, two days per week and
- 160 lambs and sheep, two days per week,



We have calculated the plant water volume at

- 60 m<sup>3</sup> per day maximum, and
- 36 m<sup>3</sup> per day average.

3. Norms of the Ministry of Tourism and the Environment

Mr. Wilton Conliffe, Senior Environmental Engineer of the above ministry expressed the opinion that we would be allowed an effluent BOD 5 load, in the effluent from the sewerage treatment plant, equivalent to the load that would be produced if the land was occupied by a residential development. The norms applicable in this case, for comparison purposes, would be the following:

- 10,000 sq. ft. lots
- 5 persons/lot
- 60 gals./day/person
- use of septic tank
- influent load BOD 5 - 200 p.p.m.
- output load BOD 5 - 100 p.p.m.

4. Proposed Sewerage Treatment Plant

We propose the use of the following plant:

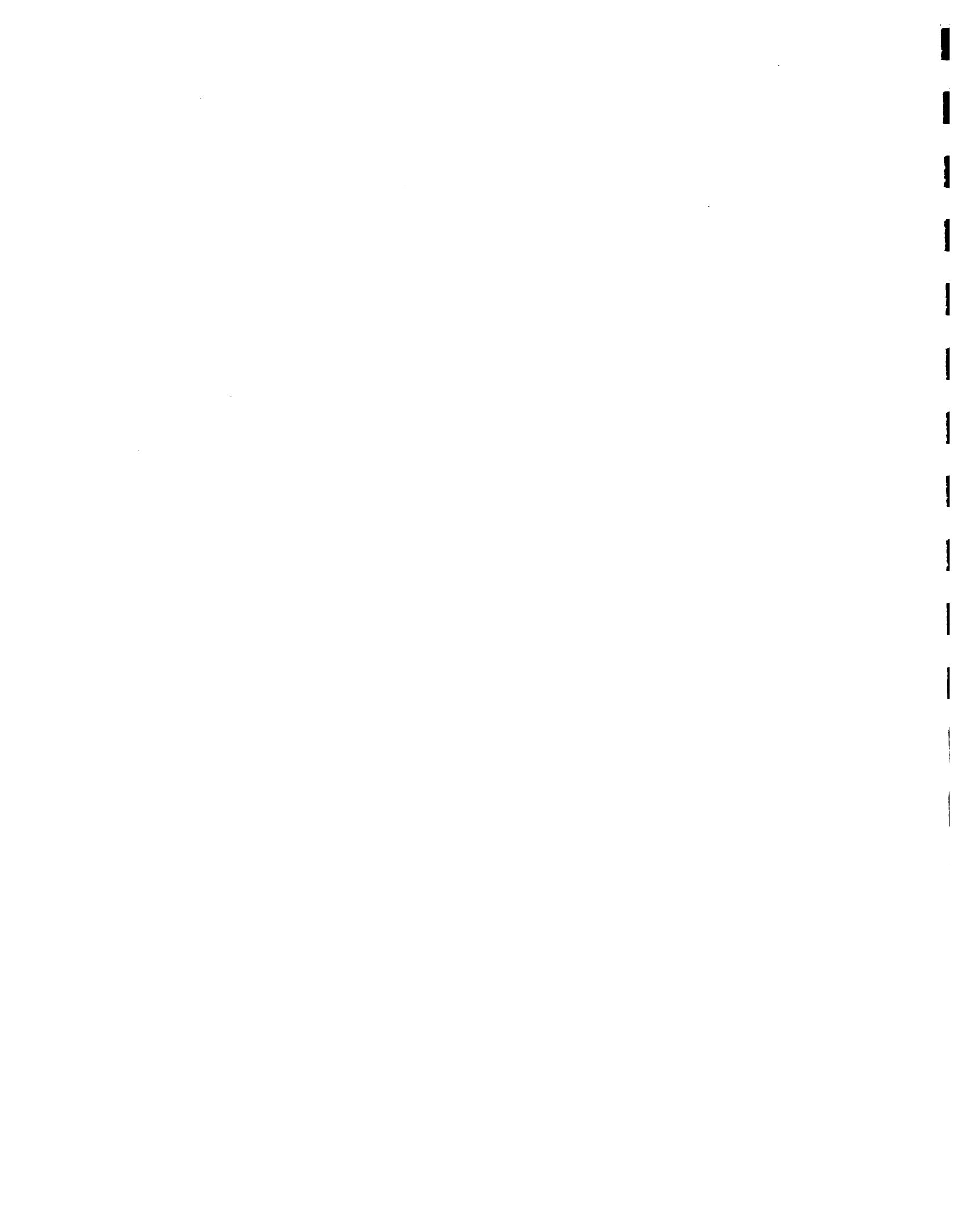
- Manufacturer: NIJHUIS, Holland
- The plant involves primary and secondary treatment and, for the volume given earlier, would fit in a building measuring approximately 6 m X 8 m X 3,5 m high.
- The first stage is a self-cleaning rotary filter having a capacity of 6 cubic meters per hour.
- The effluent is then pumped through an accelerated flotation system using chemical additives which can be ferric chlorides or poly - electrolyte flocculents.




- Reduction of contaminants will be as follows:

. Reduction of BOD 5	- 75 - 80%
. Reduction of suspended solids	85 - 95%
. Reduction of fats and greases	90%
. PH	unaffected

- A preliminary calculation indicates that the pollution level of the effluent stream coming from the sewerage treatment plant would, under the norms given earlier, be about equal to a 10 acre plot converted to residential use.





DATE : MARCH '86		
E: 1:20-0 1:240		
JOB N°	SHEET N°	397 86-1
SITE PLAN		
ANR-ILP		
CHAEL, BARBADOS.		
JECT		

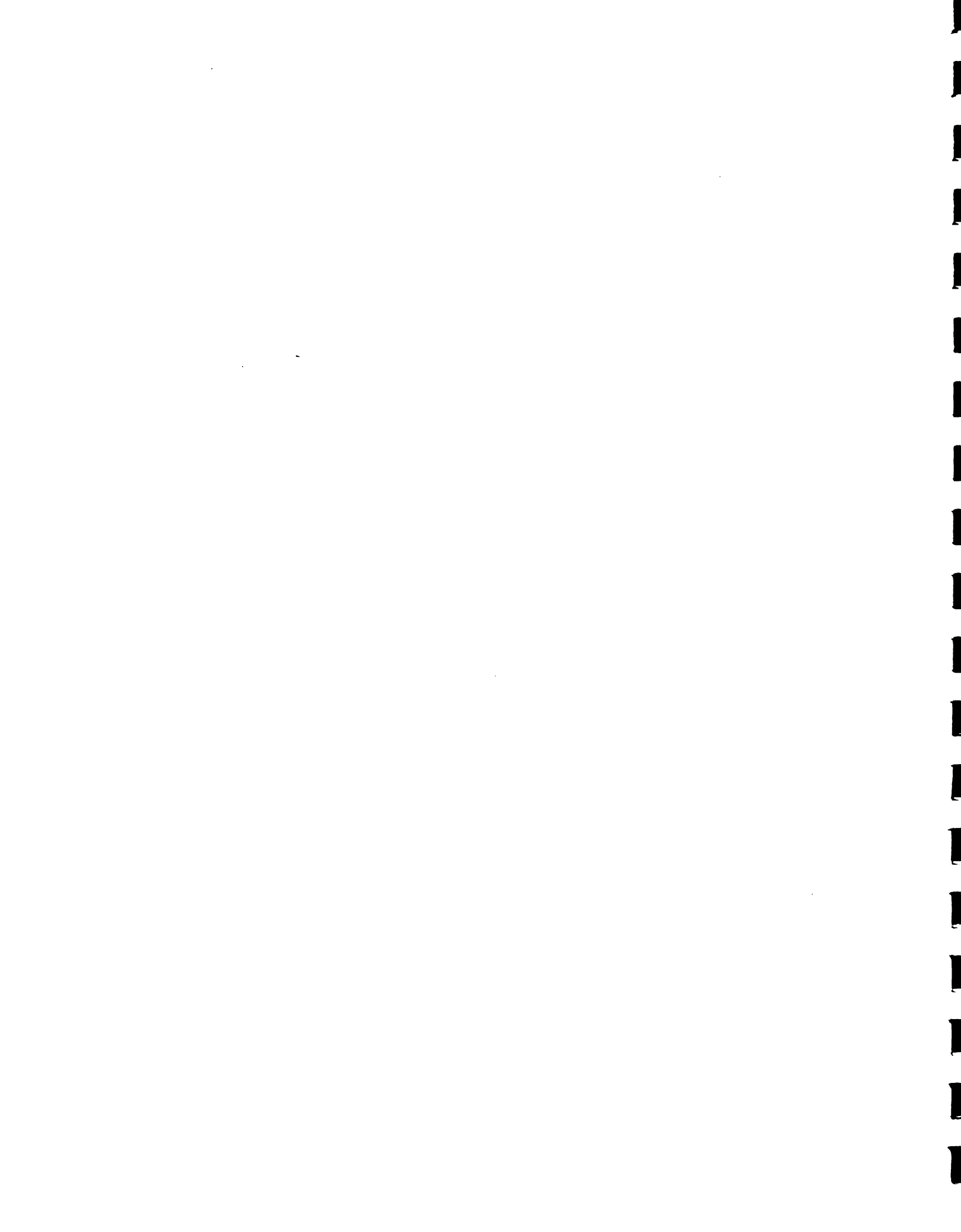
MAIL ONE 22-AZ

MAIL ONE 22

33

29





LIVESTOCK PENS.

10  
LBS.

LOADING DOCK.

ADJ. HYDRAULIC RAMP.

RECEIVING

DELIVERY.

ADJ. HYDRAULIC RAMP.

RECEIVING DOCK.

BALL NOT 2'-6"

R&D CLERK

DATE: M

SCALE: 1/4"

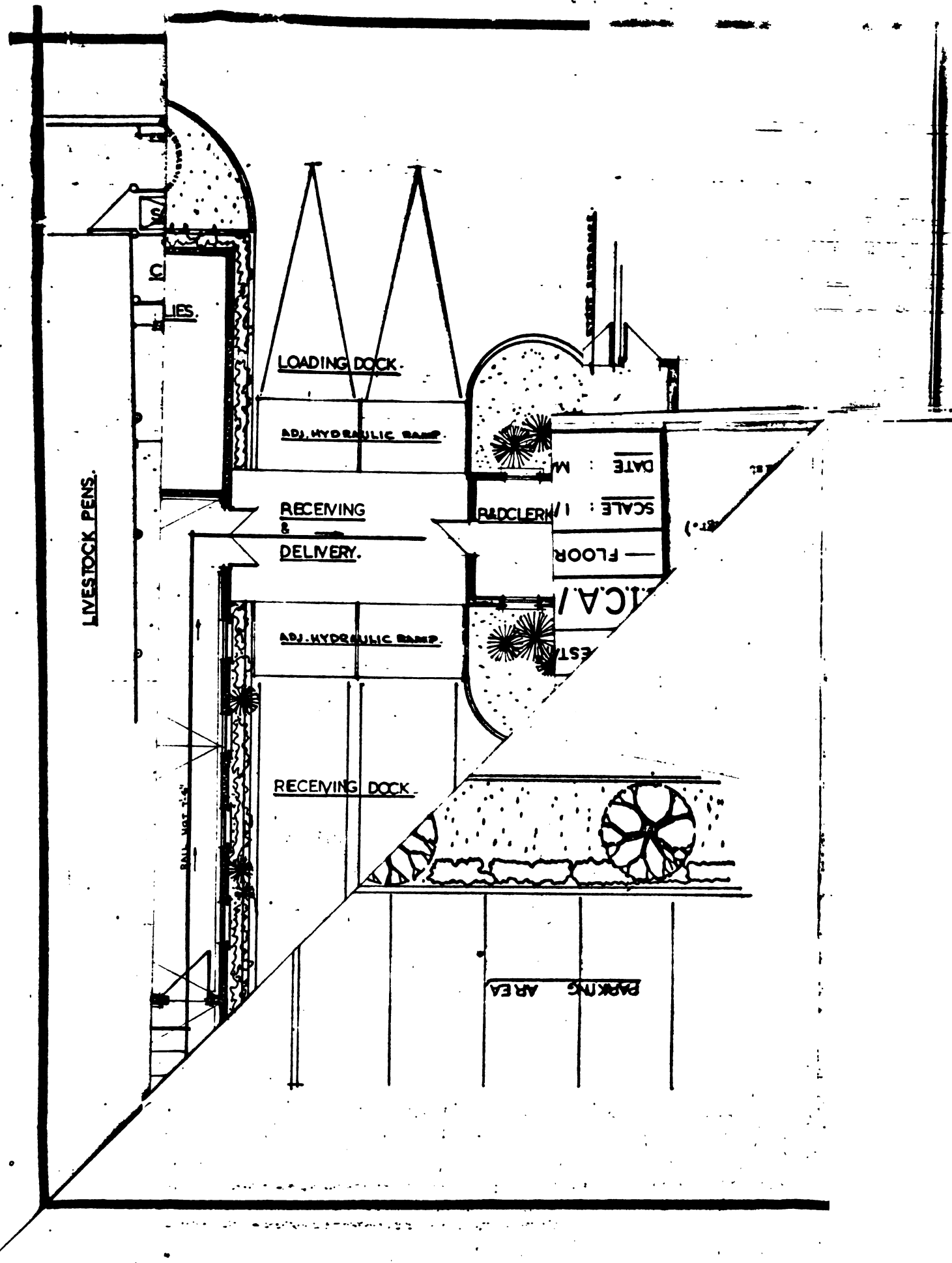
FLOOR

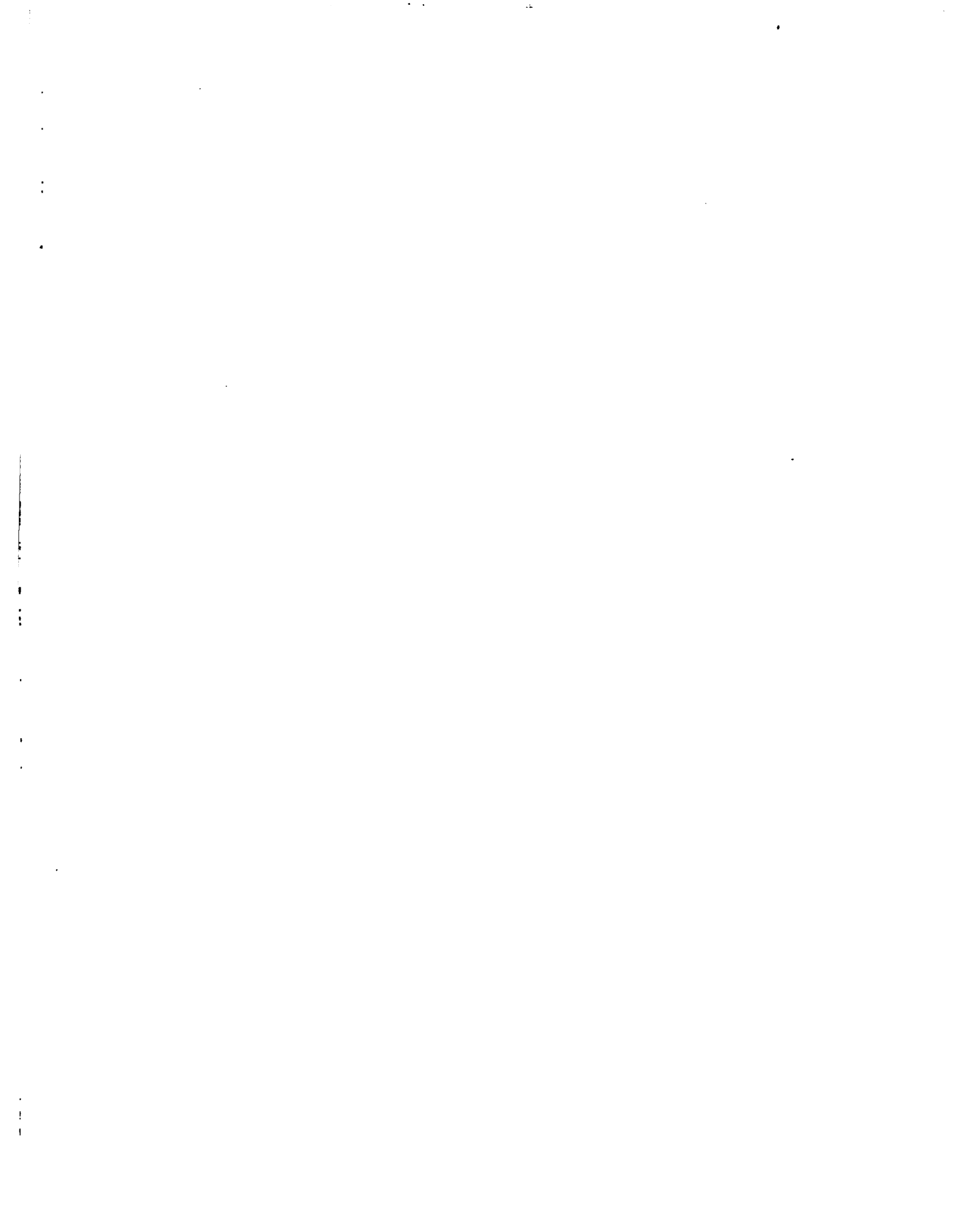
ICA/

EST

PARKING AREA

STEEL STRUCTURE







1871  
1872

