

MINISTRY OF AGRICULTURE,
ANIMAL HUSBANDRY AND FISHERIES



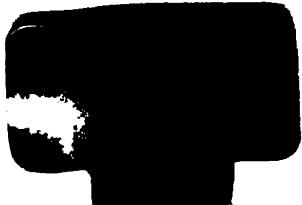
SURINAME DAIRY PRODUCTION PROJECT
FEASIBILITY STUDY

II

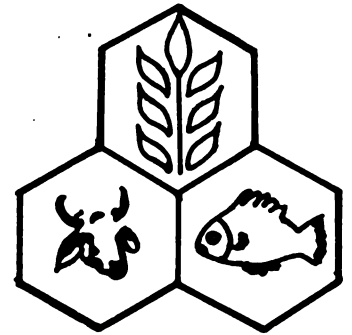
INTERAMERICAN INSTITUTE FOR COOPERATION ON AGRICULTURE

— OFFICE IN SURINAME —





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FEASIBILITY STUDY

II

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— OFFICE IN SURINAME —



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SURINAME DAIRY PRODUCTION FEASIBILITY STUDY

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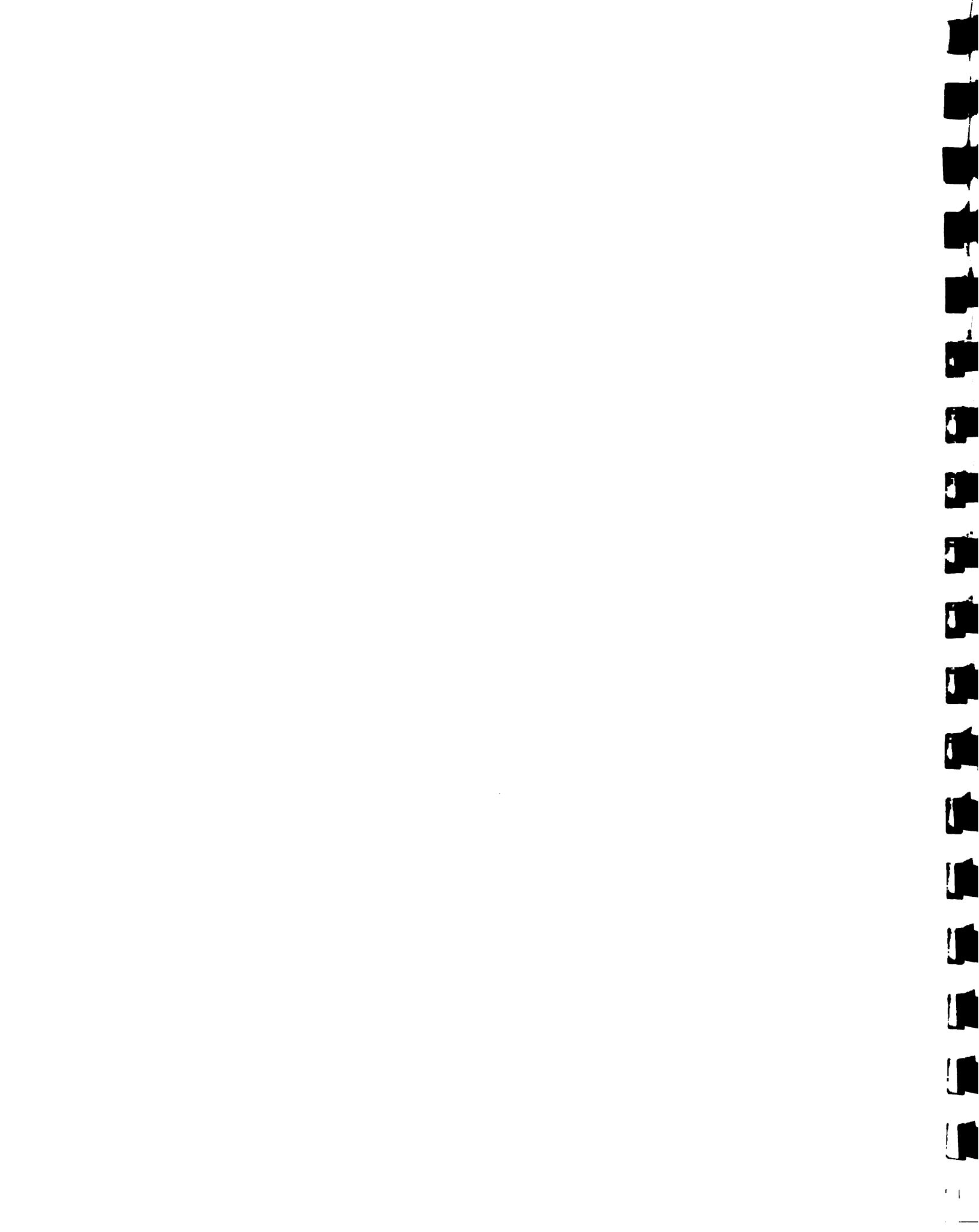
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A N N E X E S
T O C H A P T E R I I
T H E N A T I O N A L
E C O N O M Y

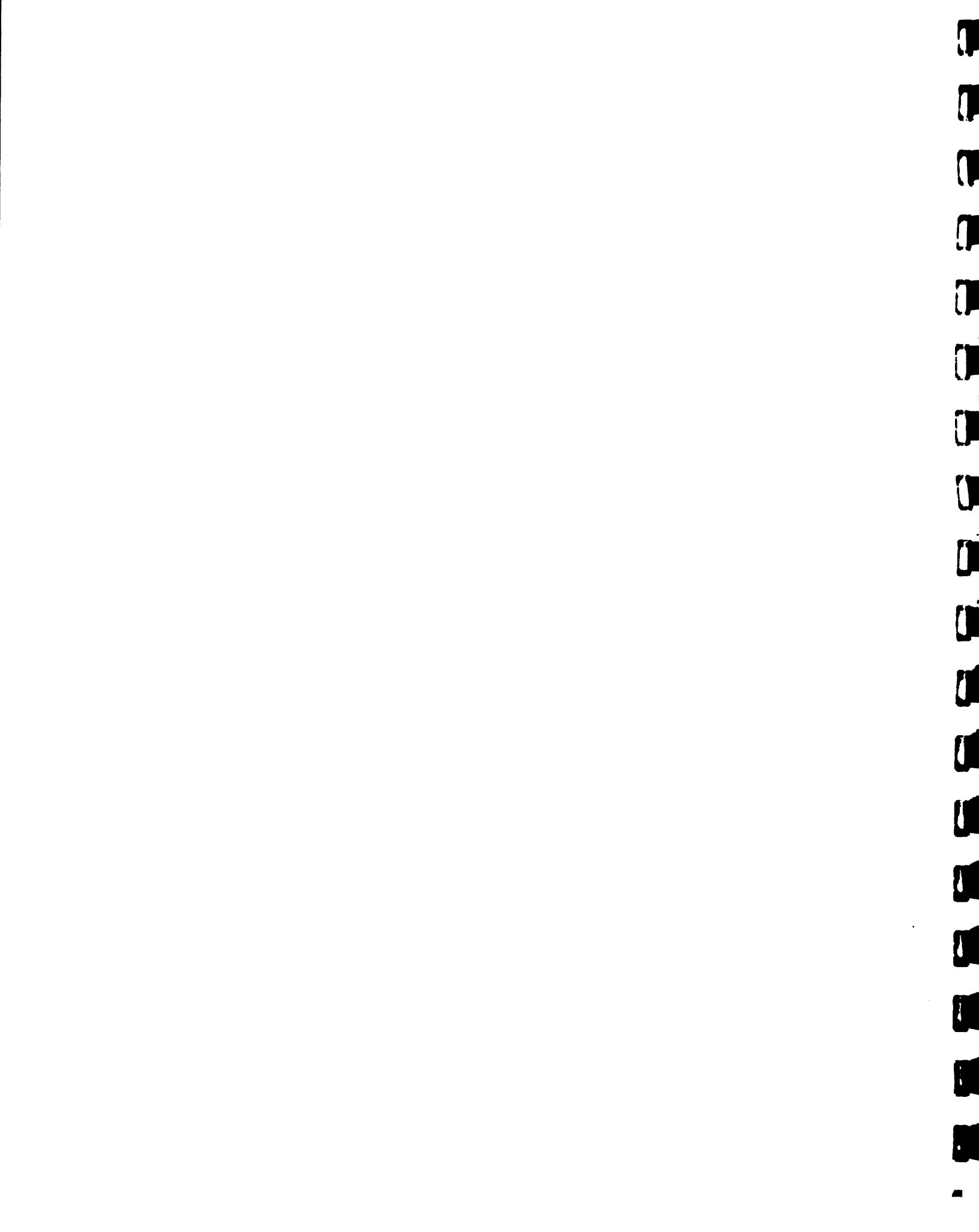
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SURINAME
GROSS DOMESTIC PRODUCT BY SECTOR
AT CONSTANT PRICES, 1980=100
(million of SF)

ANNEX TABLE II.1.1

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Agriculture	96.9	100.4	115.4	110.2	121.8	122.7	138.9	134.7	122.9	127.6	129.4	134.4
Mining	161.7	174.8	145.3	151.1	134.4	96.8	102.6	80.6	60.4	77.3	87.3	96.6
Manufacturing	262.1	281.8	277.3	295.0	278.4	249.1	256.1	214.0	193.6	187.5	195.6	196.9
Gas, Water, Elect.	50.8	51.5	70.7	77.3	86.0	87.1	78.0	63.3	64.0	63.9	59.0	53.0
Construction	56.5	81.7	153.6	116.3	105.0	88.6	106.3	104.5	94.4	98.1	87.0	77.2
Trade, Rest. Hotels	236.1	238.3	279.8	318.5	306.8	273.3	263.8	269.7	255.2	214.9	191.3	161.0
Transport, Storage, Comm.	77.3	81.9	86.9	95.6	83.6	84.1	82.4	84.1	90.6	93.0	105.0	109.4
Financial & Insurance	75.4	75.5	76.9	95.0	95.3	102.7	139.9	119.3	95.8	89.7	110.0	107.6
Housing	63.2	65.3	68.6	71.5	73.0	73.8	76.3	77.9	79.3	80.5	84.5	85.9
Public Administration	173.3	207.7	224.2	259.5	221.6	225.9	276.1	298.5	322.3	322.5	334.9	354.4
Personal	21.9	21.1	20.3	22.3	21.7	21.9	24.3	25.4	26.3	20.0	15.0	15.0
GDP	1275.2	1380.0	1519.0	1612.3	1527.6	1426.0	1544.7	1472.0	1404.8	1375.0	1399.0	1391.4
					Percentage							
Agriculture	7.6	7.3	7.6	6.8	8.0	8.6	9.0	9.2	8.7	9.3	9.2	9.7
Mining	12.7	12.7	9.6	9.4	8.8	6.8	6.6	5.5	4.3	5.6	6.2	6.9
Manufacturing	20.6	20.4	18.3	18.3	18.2	17.5	16.6	14.5	13.8	13.6	14.0	14.2
Gas, Water, Elect.	4.0	3.7	4.7	4.8	5.6	6.1	5.0	4.3	4.6	4.6	4.2	3.8
Construction	4.4	5.9	10.1	7.2	6.9	6.2	6.9	7.1	6.7	7.1	6.2	5.5
Trade, Rest. Hotels	18.5	17.3	18.4	19.8	20.1	19.2	17.1	18.3	18.2	15.6	13.7	11.6
Transport, Storage, Comm.	6.1	5.9	5.7	5.9	5.5	5.9	5.3	5.7	6.4	6.8	7.5	7.9
Financial & Insurance	5.9	5.5	5.1	5.9	6.2	7.2	9.1	8.1	6.8	6.5	7.9	7.7
Housing	5.0	4.7	4.5	4.4	4.8	5.2	4.9	5.3	5.6	5.9	6.0	6.2
Public Administration	13.6	15.1	14.8	16.1	14.5	15.8	17.9	20.3	22.9	23.5	23.9	25.5
Personal	1.7	1.5	1.3	1.4	1.4	1.5	1.6	1.7	1.9	1.5	1.1	1.1

Source: General Bureau of Statistics



SURINAME
NATIONAL INCOME PER CAPITA

. II.1.2

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Gross Domestic Product at factor cost	735.95	852.86	1102.12	1236.08	1339.02	1354.64	1528.66	1603.68	1560.45	1530.68	1558.26	1604.59
Indirect taxes less subsidies	195.80	158.60	180.60	234.90	226.30	247.70	269.60	245.10	226.40	214.10	183.00	146.50
Net factor income from abroad	-25.30	-65.60	-61.30	-55.20	-73.70	-30.70	23.00	12.30	-20.10	2.50	-0.90	-4.30
Mid year population	364.50	354.50	362.09	367.33	364.99	356.52	355.27	363.04	370.82	378.38	387.63	396.93
Gross Domestic Product at market price	930.75	1011.46	1282.72	1470.98	1565.32	1602.34	1798.26	1848.78	1786.85	1744.78	1741.26	1751.09
Gross national product at factor cost	709.65	787.26	1040.82	1180.88	1265.32	1323.94	1551.66	1615.98	1540.35	1533.18	1557.36	1600.24
Gross national product at market price	905.45	945.86	1221.42	1415.78	1491.62	1571.64	1821.26	1861.08	1766.75	1747.28	1740.36	1746.79
Gross domestic product per capita	2550.00	2850.00	3540.00	4000.00	4290.00	4490.00	5060.00	5090.00	4820.00	4610.00	4490.00	4410.00
Gross national product per capita	2480.00	2670.00	3370.00	3850.00	4090.00	4410.00	5130.00	5130.00	4760.00	4620.00	4490.00	4400.00
Capital consumption	90.96	112.37	134.10	145.62	168.36	171.58	186.40	182.33	182.47	172.97	174.55	180.75
National Income	814.49	833.49	1087.32	1270.16	1323.26	1400.06	1634.86	1678.75	1584.28	1574.31	1565.81	1566.04
National Income per capita	2230.00	2350.00	3000.00	3460.00	3630.00	3930.00	4600.00	4620.00	4270.00	4150.00	4040.00	3950.00
*Real national income per capita	3720.00	3670.00	4000.00	4380.00	3980.00	3930.00	4380.00	4020.00	3680.00	3590.00	3450.00	3260.00

* Use is made of the GDP deflator to estimate these real figures
SOURCE: General Bureau of Statistics
(revised figures)

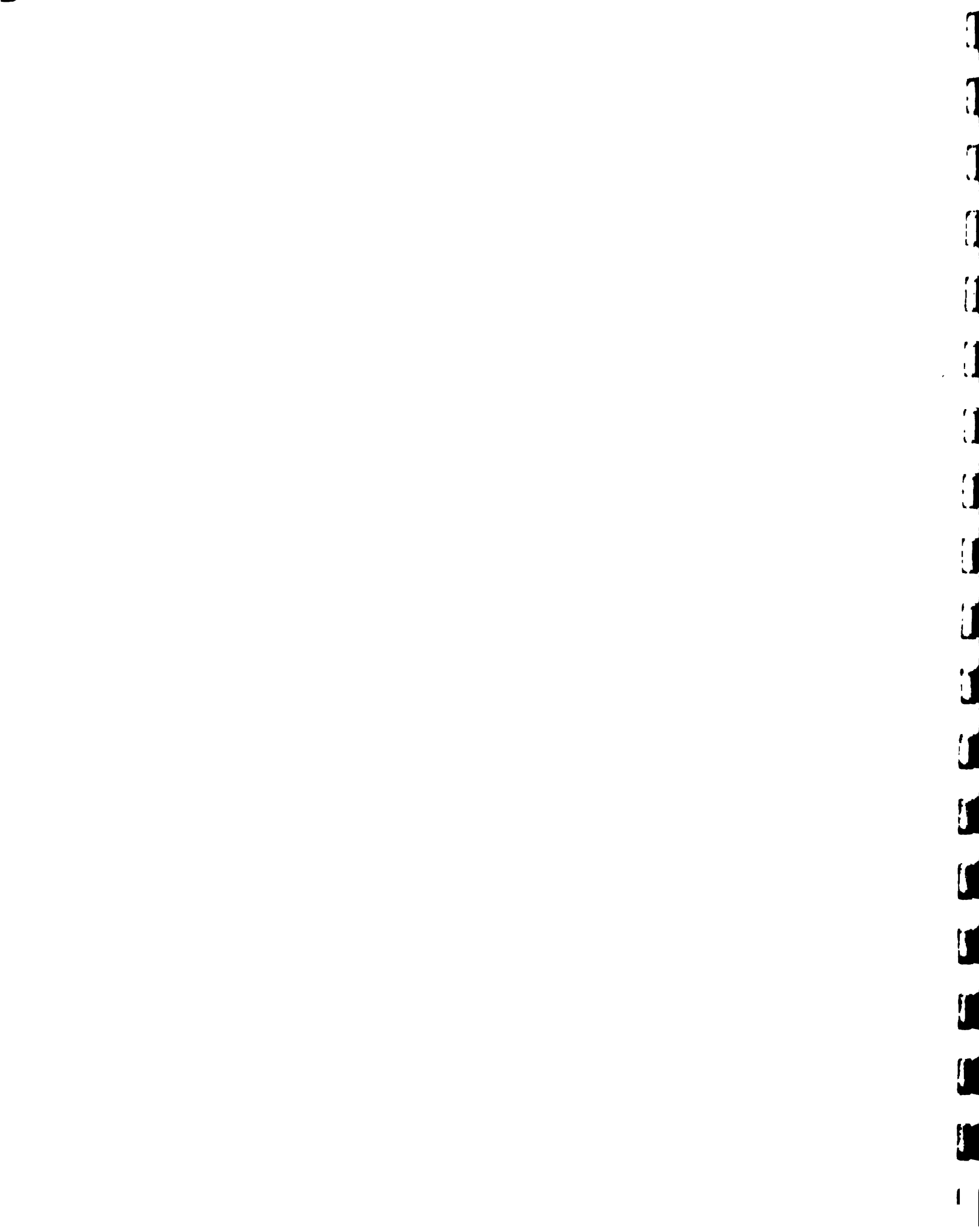
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SURINAME
GROSS DOMESTIC PRODUCT BY SECTOR
AT CURRENT PRICES
(x million of SF)

II.1.3

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	PREL.
LVY & B.	58.50	72.45	92.05	91.65	116.04	122.70	140.07	144.27	126.90	134.49	142.65	165.97	
Mining	90.56	87.41	103.18	113.32	125.03	96.80	123.59	132.80	95.65	92.68	94.64	78.81	
Industry	152.26	181.18	202.88	225.34	239.62	249.09	271.23	225.78	195.27	197.39	206.57	212.85	
Gas, Water & Electricity	22.53	22.73	34.17	46.71	62.07	87.10	73.40	69.70	92.90	88.00	66.40	50.39	
Construction	33.92	54.73	127.16	104.17	102.58	88.55	106.24	99.73	99.73	106.46	97.20	101.90	
Trade, Restaurant & Hotel	142.35	17.28	200.90	246.82	270.93	273.30	386.70	314.50	310.60	271.21	267.78	267.26	
Transport, store & communication	48.30	53.33	61.44	82.50	77.81	84.14	98.56	100.21	106.18	111.44	127.74	137.00	
Banks & Insurances	45.72	50.70	57.17	75.54	89.93	102.70	142.80	140.80	118.60	117.73	147.36	162.00	
Living & Commercial Service	36.29	42.09	54.62	62.91	70.42	73.82	76.94	82.08	83.89	86.69	92.33	95.49	
Government incl. def.	118.35	141.83	182.26	210.94	221.56	225.85	276.09	346.28	373.88	374.07	383.83	411.13	
Personal, Social & other Community service	13.12	13.93	14.64	17.41	19.05	21.87	26.37	29.51	32.10	25.18	21.02	24.93	
Interest marge from Banks	26.95	24.80	28.35	41.23	56.02	71.28	93.86	92.25	75.25	74.66	89.26	103.64	
Gross Interior Products at factor costs	734.95	852.86	1102.12	1236.08	1339.02	1354.64	1528.66	1603.68	1560.45	1530.68	1558.26	1604.59	

SOURCE: General Bureau of Statistics
(revised figures)

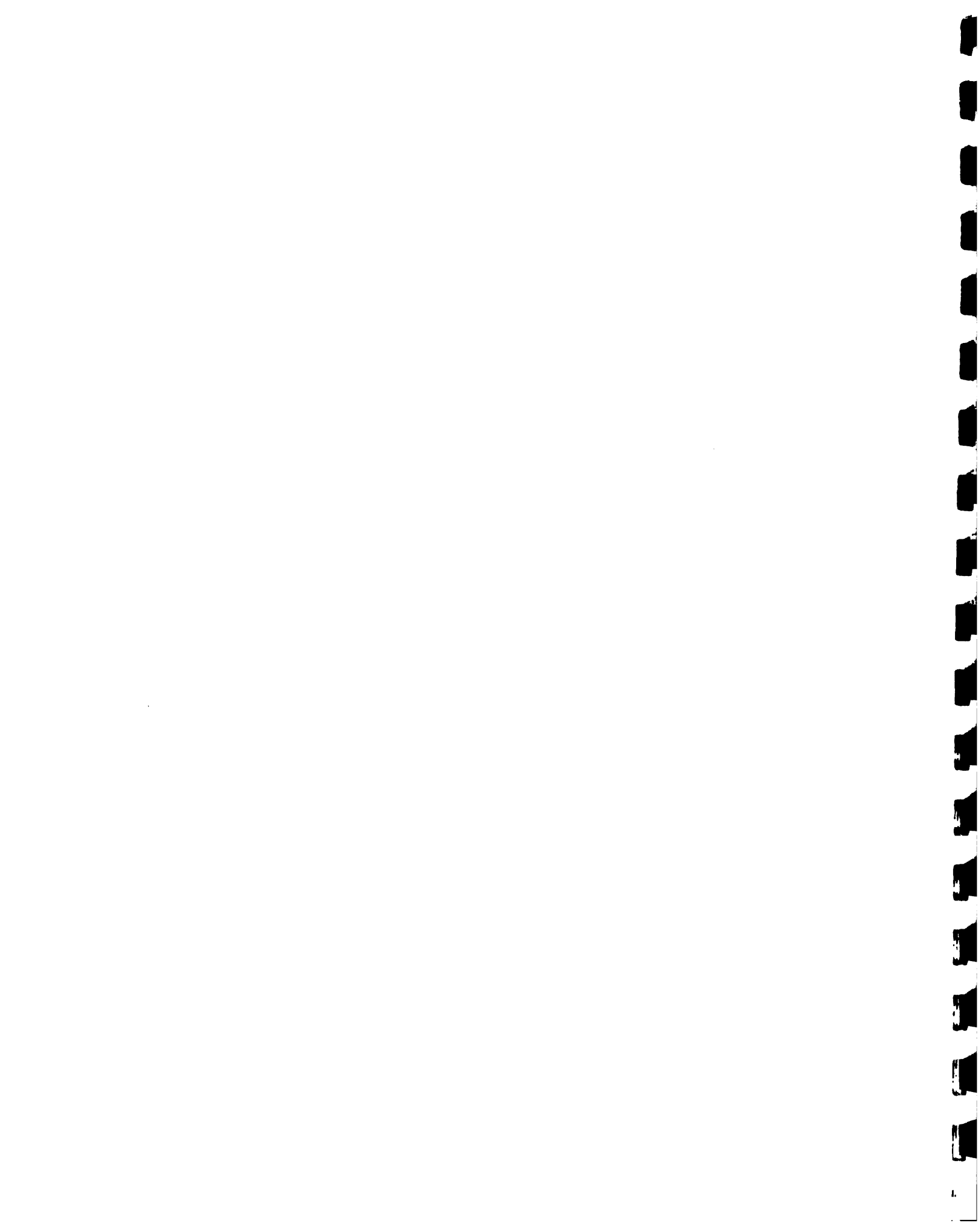


SURINAME-EXPENDITURE ON GDP AT
CURRENT PRICES, 1975-1986
(SF MILLION)

II.1.4

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
consumption	687	624	891	1028	1213	1267	1492	1623	1768	1611	1639	1651
Public	195	256	282	335	343	339	431	520	437	499	589	733
Private	492	368	609	693	870	928	1061	1103	1331	1112	1050	918
Investment (1)	301	389	479	477	357	421	555	507	276	204	138	94
Public	116	162	179	202	184	181	243	288	166	113	97	84
Private	185	227	300	272	173	240	312	219	110	91	41	10
Resource Balance	-56	-2	-88	-34	-5	-85	-248	-281	-257	-70	-34	6
Exports G&S	578	618	707	814	917	1094	1010	910	776	749	640	569
Imports G&S	634	620	795	848	922	1179	1258	1191	1033	819	674	563
GDP AT CURRENT MARKET PRICES	932	1011	1282	1471	1565	1603	1799	1849	1787	1745	1743	1751
GROSS DOMESTIC SAVINGS	245	387	391	443	352	336	307	226	19	134	104	100

1) Includes changes in stocks.
Source: Suriname Planning Office, Bureau of Statistics

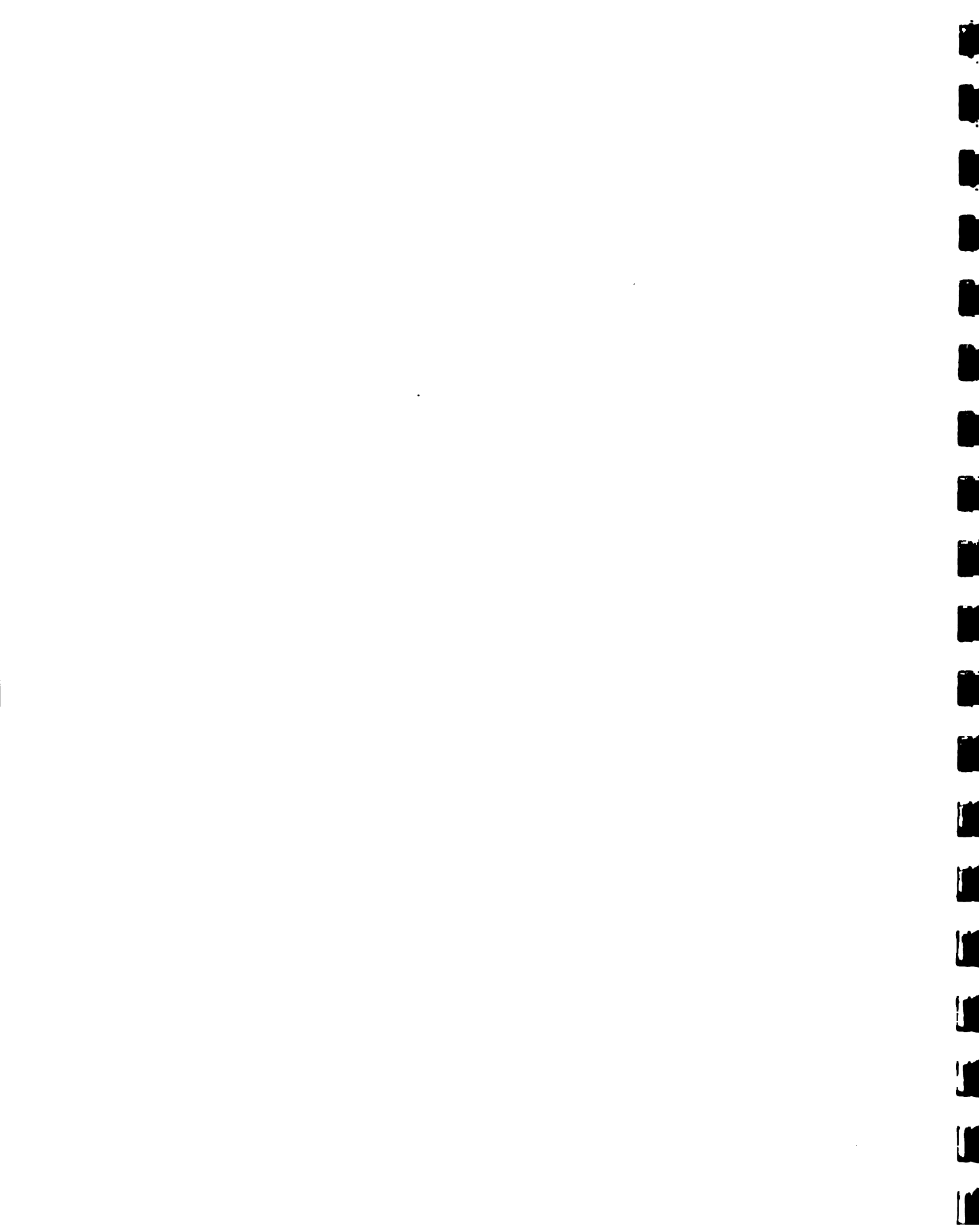


SURINAME-EXPENDITURE ON GDP AT
CONSTANT PRICES, (1980 = 100)
(\$F MILLION)

II.1.5

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
consumption	1149.4	981.0	1195.7	1297.2	1329.8	1267.0	1419.7	1413.3	1528.0	1391.7	1405.8	1367.4
Public	326.3	402.5	378.4	422.7	376.0	339.0	410.1	452.8	377.7	431.1	505.2	607.1
Private	823.2	578.5	817.2	874.4	953.7	928.0	1009.6	960.5	1150.3	960.6	900.6	760.3
Investment (1)	503.6	611.5	642.8	601.9	391.4	421.0	528.1	441.5	238.5	176.2	118.4	77.9
Public	194.1	254.7	240.2	254.9	201.7	181.0	231.2	250.8	143.5	97.6	83.2	69.6
Private	309.5	356.9	402.6	343.2	189.7	240.0	296.9	190.7	95.1	78.6	35.2	8.3
Resource Balance	-93.7	-3.1	-118.1	-42.9	-5.5	-85.0	-236.0	-244.7	-222.1	-60.5	-29.2	5.0
Exports G&S	967.0	971.5	948.7	1027.1	1005.3	1094.0	961.1	792.4	670.6	647.0	548.9	471.3
Imports G&S	1060.7	974.7	1066.8	1070.0	1010.7	1179.0	1197.1	1037.1	892.7	707.5	578.1	466.3
GDP AT CONSTANT PRICES	1559.3	1589.4	1720.3	1856.2	1715.6	1603.0	1711.9	1610.1	1544.4	1507.4	1495.0	1450.2
GROSS DOMESTIC SAVINGS	409.9	608.4	524.7	559.0	385.9	336.0	292.1	196.8	16.4	115.8	89.2	82.8

1) Includes changes in stocks.
Source: Suriname Planning Office, Bureau of Statistics



II.2.1

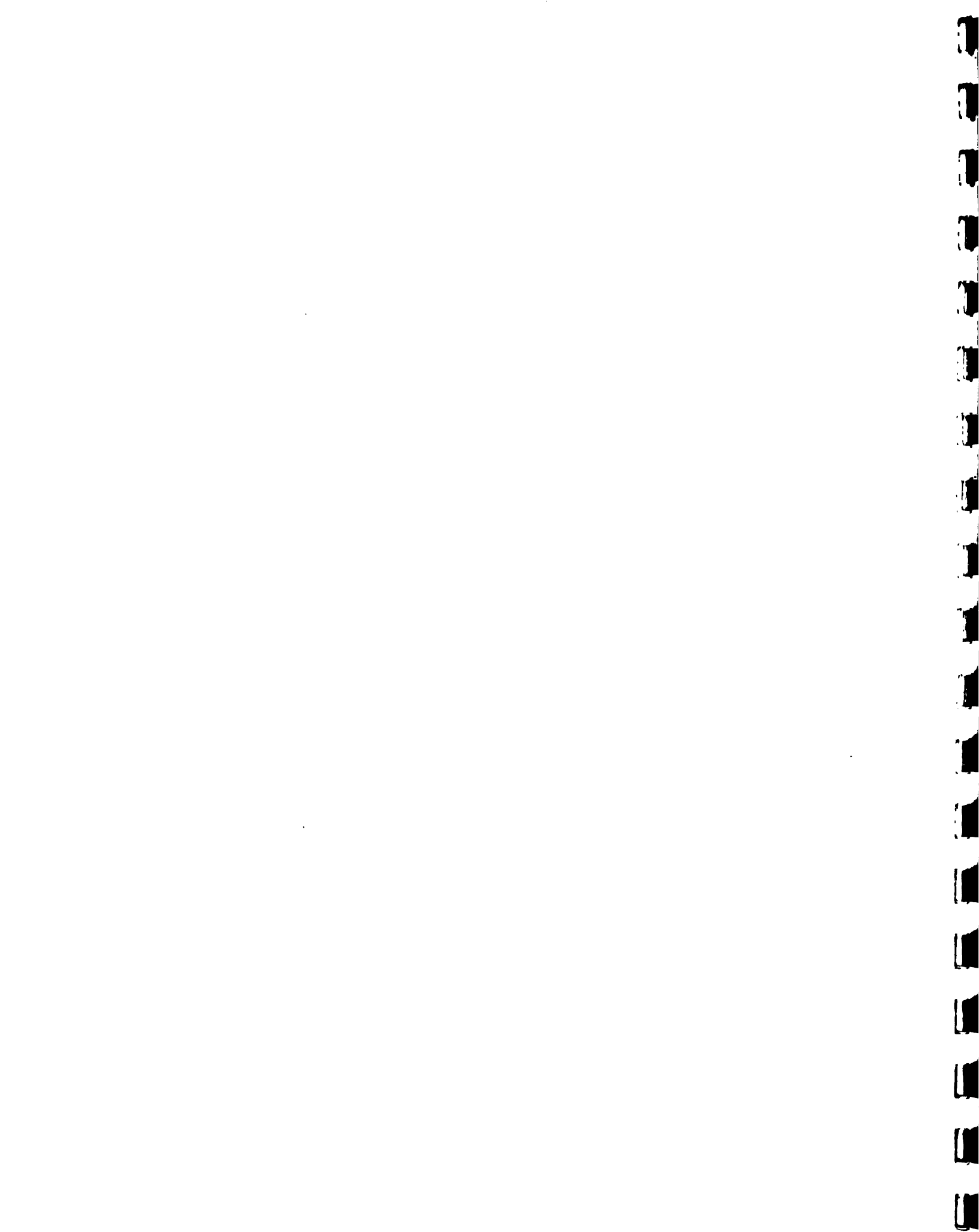
PRINCIPAL EXPORT PRODUCTS 1975-1986
(VALUE IN MLN SP. VOLUME IN 1000 METRIC TONS; AND UNIT PRICE IN SP. PER TON)

PROD.	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
BAUXITE												
Value	113.1	100.9	117.1	128.7	117.1	132.0	112.5	52.0	44.5	72.8	63.3	48.0
Quant.	2302	1989	2172.0	2241.0	1737.0	1767.0	1270.0	497.0	449.0	957.3	992.5	839.2
Price	49	51	54.0	57.0	67.0	74.0	89.0	105.0	99.0	76.0	65.0	57.0
ALUMINA												
Value	226	250	271.0	314.0	358.0	499.0	474.0	412.5	383.0	355.7	310.0	318.2
Quant.	1087	1071	1059.0	1125.0	1185.0	1329.0	1165.0	1043.0	1143.0	1097.0	1265.0	1342.0
Price	208	233	256.0	279.0	303.0	375.0	407.0	395.0	337.0	328.0	248.0	237.0
ALUMINIUM												
Value	39	69	106.0	108.0	134.0	116.0	87.4	124.0	62.0	76.0	55.0	62.5
Quant.	26	46	58.0	55.0	63.0	46.0	32.0	60.0	29.0	29.0	28.0	30.0
Price	1484	1499	1837.0	1973.0	2103.0	2521.0	2731.0	2056.0	2153.0	2599.0	1961.0	2119.0
RICE												
Value	32.9	27.4	30.6	41.8	67.8	75.0	87.4	124.0	62.0	76.0	55.0	62.5
Quant.	59	57	55.0	75.0	103.0	111.0	113.0	131.0	127.0	95.0	128.0	108.0
Price	559	477	559.0	559.0	658.0	745.0	579.0	538.0	519.0	600.0	606.0	590.0
BANANA												
Value	6.1	7.4	5.9	7.0	7.4	10.5	12.2	13.2	13.2	16.0	18.3	20.0
Quant.	38	37	27.0	29.0	27.0	34.0	37.0	38.0	32.0	35.0	37.0	36.0
Price	159	200	216.0	241.0	271.0	308.0	334.0	352.0	410.0	456.0	491.0	553.0
SHRIMP												
Value	23.7	47.4	51.6	53.2	47.8	56.0	73.0	74.9	64.0	64.1	43.8	68.6
Quant.	3	4	4.0	4.0	3.0	3.0	4.0	3.0	3.0	3.0	3.0	3.0
Price	6870	13110	13490.0	14290.0	14510.0	18667.0	19730.0	22697.0	20774.0	19455.0	20000.0	25407.0
TIMBER & WOOD PROD.												
Value	11.6	11.7	11.0	12.3	19.4	21.0	18.6	20.5	11.3	8.7	6.4	4.8
Quant.	50	44	36.0	33.0	51.0	59.0	52.0	47.0	32.0	23.0	17.0	14.0
Price	232	266	306.0	372.0	380.0	356.0	358.0	436.0	353.0	378.0	376.0	342.0
OIL PALM PROD.												
Value						1.1	0.9	0.8	1.0	1.0	1.6	0.1
Quant.						2.0	2.4	1.9	2.6	2.8	2.9	0.7
Price						550.0	375.0	421.0	385.0	357.0	552.0	143.0
SEMI-PROCESSED FISH												
Value						0.7	0.7	1.5	2.1	3.0	1.5	1.6
Quant.						0.3	0.3	0.4	0.5	0.8	0.5	0.5
Price						2333.0	3750.0	3750.0	4200.0	3750.0	3000.0	3200.0

SOURCE: CENTRAL BANK OF SURINAME, AND PLANNING BUREAU

1) In 1000 M3

2) Sur. Gld per M3



II.2.2

IMPORTS OF GOODS PER ECONOMIC GROUP (IN SP. MLN)

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Fuel, Lubricants etc.	94.4	86.3	114.7	175.2	224.7	267.6	259.7	226.3	201.9	195.3	175.9	105.5
Raw Material & Resources	162.9	177.4	223.7	174.4	166.8	292.7	310.8	297.8	265.5	256.3	221.9	221.0
Thread & Fabrics	12.9	17.2	15.7	25.1	24.6	21.1	24.2	20.5	26.0	21.2	11.4	12.4
Consumer goods	94.7	124.4	171.8	185.5	164.2	194.8	230.0	224.8	195.1	141.5	99.6	110.5
Cars & Motorcycles	8.0	16.2	19.4	66.8	51.8	15.2	23.7	25.8	14.0	6.6	10.1	18.4
Investment goods	81.2	104.0	164.6	97.6	106.6	133.9	162.5	141.5	89.1	78.0	84.8	102.8
TOTAL	454.1	525.5	709.9	724.6	738.7	925.3	1010.9	936.7	791.6	698.9	603.7	570.6

SOURCE: General Bureau of Statistic, Ministry of Financing and Planning and Bauxite Institute Suriname.



SURINAME - BALANCE OF PAYMENTS, 1975 - 1986
(US\$ MILLION)

II.2.3

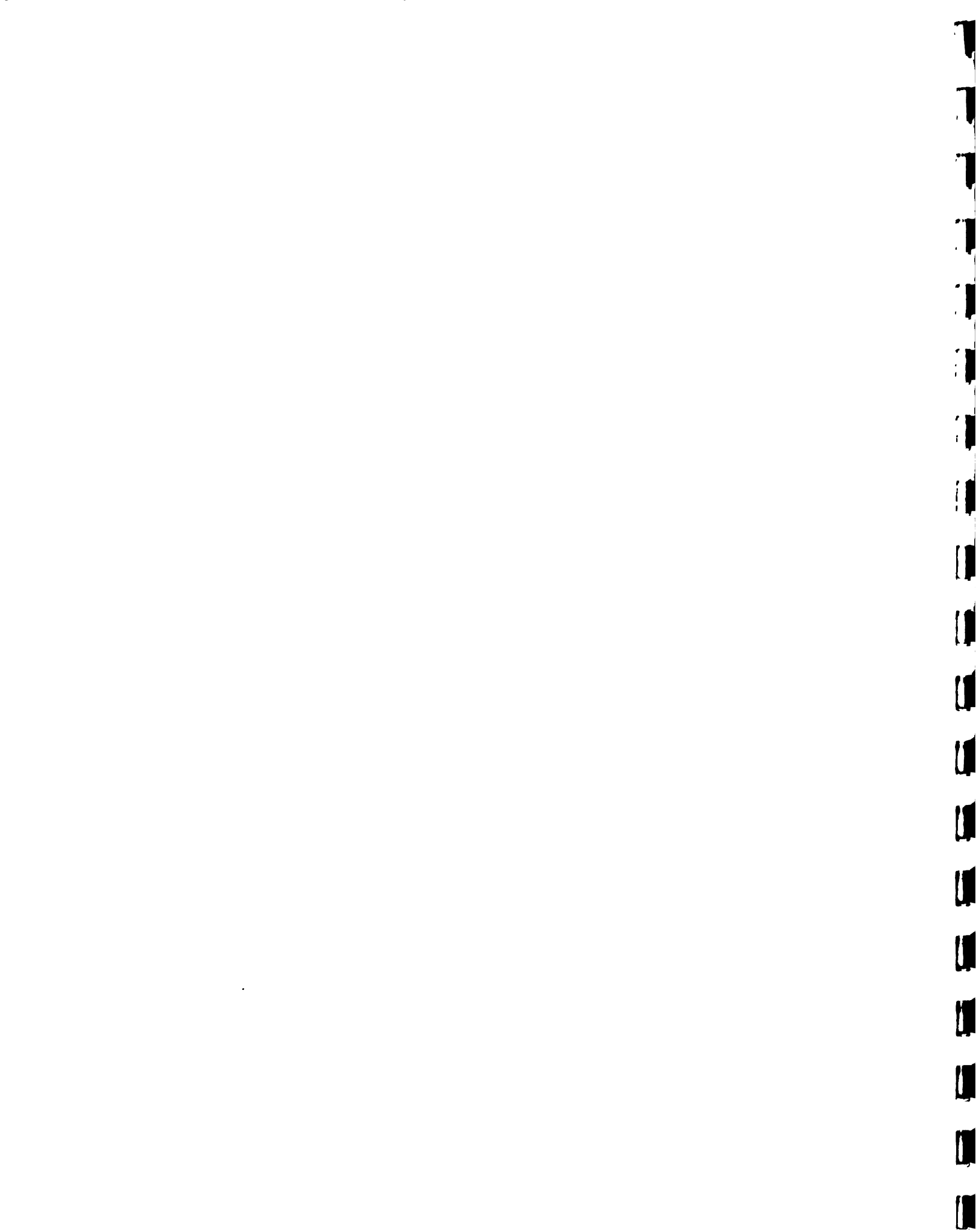
	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Exports of Goods												
& NPS	329.3	346.2	396.2	455.8	513.6	613.0	584.8	531.5	450.0	427.5	380.2	369.0
Merchandise exp.	277.5	303.9	346.2	393.5	444.1	514.4	492.9	450.6	382.3	372.3	336.1	343.9
Non Factor Serv.	51.8	42.3	50.0	62.3	69.5	98.6	91.9	80.9	67.7	55.2	44.1	25.1
Imports of Goods and NPS	359.3	347.1	445.1	474.8	516.3	660.8	723.9	689.4	605.7	511.5	422.7	399.7
Merchandise exp.	263.4	283.0	360.1	381.7	410.9	504.4	587.0	538.1	477.4	406.4	335.6	320.1
Non Factor Serv.	95.9	64.1	85.0	93.1	105.4	156.4	136.9	151.3	128.3	105.1	87.1	79.6
Resource Balance	-30.0	-0.9	-48.9	-19.0	-2.7	-47.8	-139.1	-157.9	-155.7	-84.0	-42.5	-30.7
Fact.Serv.&Trans.	-17.7	-12.3	-32.2	-27.0	-34.3	-10.5	16.6	4.6	-19.3	-9.4	-10.6	-3.2
Net factor service paym.	-11.8	-36.8	-34.3	-30.9	-41.3	-17.0	12.9	7.2	-11.3	-2.0	-6.6	-1.3
Net unrequited transfers	-5.9	24.5	2.1	3.9	7.0	6.5	3.7	-2.6	-8.0	-7.4	-4.0	-1.9
Current Acc. Bal.	-47.7	-13.2	-81.1	-46.0	-37.0	-58.3	-122.5	-153.4	-175.0	-93.4	-53.1	-33.9
Private Capital	39.2	-52.3	-11.8	-4.6	-17.1	18.5	40.0	18.9	35.2	-13.2	17.6	-26.4
Med. & Long-term (net)	39.2	-51.9	-11.9	-6.2	1.1	3.1	45.0	22.7	10.1	28.7	5.9	-7.1
Short term a/	0.0	-0.4	0.1	1.6	-18.2	15.4	-5.0	-3.9	25.0	-41.8	11.7	-19.3
Public Capital	43.1	86.2	75.0	76.2	80.3	71.4	93.8	96.6	12.8	5.2	10.9	19.6
Grants	179.0	89.1	77.5	55.5	80.7	73.7	94.7	96.9	2.5	3.1	2.4	2.4
Med. & Long term Disb.	13.9	0.0	0.0	22.4	0.0	0.0	0.0	0.0	11.6	4.9	10.0	19.6
Assort.	151.4	1.4	1.3	1.1	1.6	1.6	2.5	1.2	1.5	1.5	1.5	1.7
Other Cap.(net)	1.6	-1.0	0.0	-0.2	0.0	0.0	-1.0	-0.6	-0.5	0.0	0.0	-0.5
Shortterm (net)	0.0	-0.5	-1.2	-0.4	1.2	-0.7	2.6	1.5	0.7	-1.3	0.0	-0.2
Capital Acc. Bal.	82.3	33.9	63.2	71.6	63.2	89.9	133.8	115.4	48.0	-8.0	28.5	-6.8
SDR Allocation	0.0	0.0	0.0	0.0	3.4	3.3	3.3	0.0	0.0	0.0	0.0	0.0
Gold Reval. b/	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17.4	-4.7	1.0	2.9
Errors, Omissions and Unclassified	0.0	0.1	0.5	14.0	-0.5	0.8	0.4	1.7	-0.8	1.3	5.2	20.9
Change in Reserv.	-34.6	-20.8	17.4	-39.6	-29.1	-35.7	-15.0	36.2	110.4	104.8	18.4	16.9
(- increase)												

Source: Central Bank of Suriname

a/ Including changes in working balances between the Suriname bauxite companies and their parent companies.

b/ Gold was revalued from US\$42 per troy ounce in August 1983, since then has been adjusted in line with the market price.

c/ Includes the counterpart of 'no funds' imports of \$8 million in 1984, \$22 million in 1985 and \$43 million in 1986. Actual exports could therefore be overstated.



II.2.4

SURINAME: INTERNATIONAL RESERVES 1)

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Bank Sys. (net)	205.2	242.3	211.2	281.9	333.9	397.6	424.5	359.7	162.7	-26.8	-74.3	-141.4
Assets	212.2	257.1	229.0	311.7	371.0	431.9	461.1	403.1	195.1	100.6	90.6	78.2
Liabilities	7.0	14.8	17.8	29.8	37.1	34.3	39.6	43.4	32.4	127.4	164.9	219.6
Monetary Author- ities (net)	172.7	205.9	177.3	229.7	294.3	338.8	370.4	315.0	139.8	-13.7	-45.3	-69.5
Assets	172.8	206.1	177.4	237.3	304.3	339.2	370.8	315.4	139.7	70.6	70.0	70.4
Liabilities	0.1	0.2	0.1	7.6	10.0	0.4	0.4	0.4	0.4	84.3	115.3	139.9
of which ext. ar.										83.7	114.6	138.8

US\$ MILLION

Tot. net reserves	115.0	135.7	118.3	157.9	187.1	222.7	237.8	201.5	91.1	-15.0	-41.6	-79.2
Monetary Auth.	96.8	115.3	99.3	128.7	164.9	189.8	207.5	176.5	78.1	-7.7	-25.4	-38.9
Commercial banks	18.2	20.4	19.0	29.2	22.2	32.9	30.3	25.1	13.1	-7.3	-16.2	-40.3

(In months of merchandise imports)

Bank Syst. net res	5.2	5.8	3.9	5.0	5.5	5.3	4.9	4.5	2.3			
Net Off. Res.	4.4	4.9	3.3	4.0	4.8	4.5	4.2	3.9	2.0			

1) Gold was revalued from US\$ 42 per troy ounce to US\$397 per troy ounce in August 1983, and has since been valued at its market price.

Source: Ministry of Finance and Central Bank Estimates.

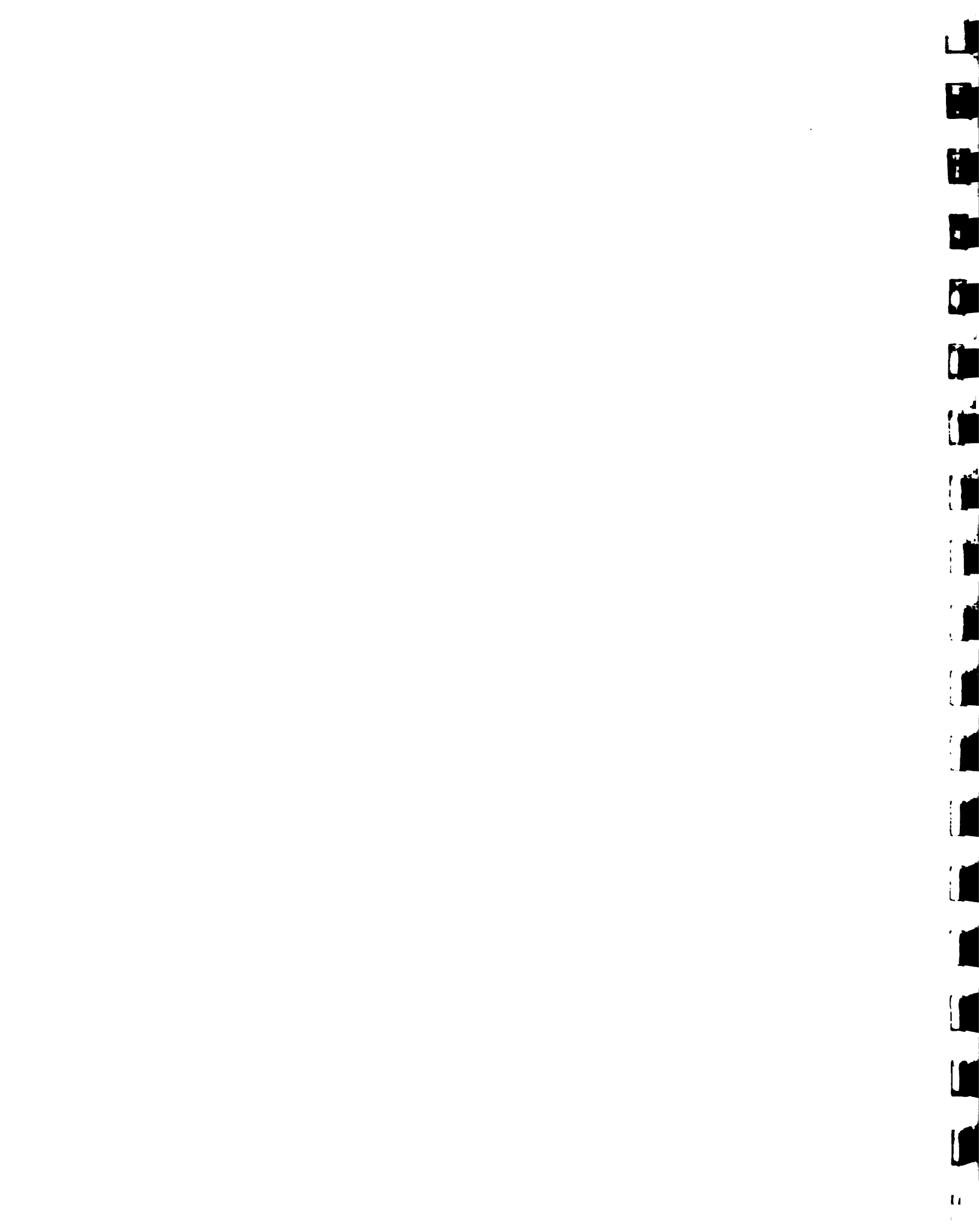


SURINAME. Central Government Operations 1975-1983
(In millions of Suriname Guilders)

II.3.1

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Current Revenue	298.3	288.2	339.4	415.9	435.7	490.0	504.6	564.3	487.4	499.6	491.1	498.9
Tax Revenues (of which baux. levy net)	271.0	255.4	299.8	375.1	367.6	413.2	429.0	422.5	395.7	400.3	379.0	375.0
Non-Tax Revenue	27.3	32.8	39.6	40.8	68.1	76.8	76.5	141.8	91.7	99.3	112.1	123.9
Current Expenditure	250.1	306.4	387.2	392.8	427.0	479.3	554.0	648.4	703.9	735.2	793.5	937.9
Wages & Salaries	142.0	154.0	202.8	234.5	245.0	258.0	265.3	319.4	355.2	379.3	409.7	433.1
Subs. & Trans.	41.0	43.0	52.0	45.0	60.0	92.8	90.7	99.3	103.0	134.1	139.2	111.9
Interest	1.1	1.6	1.5	2.7	4.5	5.6	5.1	6.6	15.2	24.3	41.4	60.3
Goods & Serv.	66.0	107.8	130.9	110.6	117.5	122.9	192.9	223.1	230.5	197.5	203.2	332.6
Current Account												
Surplus/Deficit	48.2	-18.2	-47.8	23.1	8.7	10.7	-49.4	-84.1	-216.5	-235.6	-302.4	-439.0
Development Expenditure	109.3	136.7	153.8	145.2	132.8	118.3	174.8	189.4	113.5	89.6	65.2	58.2
Overall Surplus/Deficit	-61.1	-154.9	-201.6	-122.1	-124.1	-107.6	-224.2	-273.5	-330.0	-325.2	-367.6	-497.2
Foreign Financing	67.5	154.1	134.1	135.8	143.2	127.4	169.3	175.1	23.7	6.8	5.4	39.3
of which: Grants	56.0	159.2	128.5	99.0	144.1	131.6	169.0	172.9	4.5	3.6	4.0	4.8
Domestic Financing(Net)	-6.4	0.8	67.5	-13.7	-19.1	-19.8	54.9	98.4	306.3	318.4	362.2	457.9
of which: Banking System	-5.2	-1.1	62.7	-12.5	-21.5	-21.7	53.9	94.0	308.9	385.0	356.9	456.4

Source: Ministry of Finance; Central Bank



SURINAME. Central Government Revenues 1975-1983
(In millions of Suriname Guilders)

II.3.2

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Tax Revenues	271.0	255.4	299.8	375.1	367.6	413.2	429.0	422.5	395.7	400.3	379.0	375.0
Tax on Inc. & Prof.	48.4	68.5	88.5	112.9	116.3	140.1	129.7	133.9	137.2	151.6	167.2	142.7
Personal income and Profit	18.9	23.2	28.0	37.5	42.3	51.8	61.6	83.4	103.0	92.4	111.7	105.3
Corporate Profit	28.8	44.6	59.5	74.2	70.5	86.0	63.1	48.4	31.9	57.2	54.2	34.6
Dividend Tax	0.7	0.7	1.0	1.2	3.5	2.3	5.0	2.1	2.3	2.0	1.3	2.8
Taxes on Property	0.3	0.4	1.0	1.0	0.7	1.4	1.5	1.1	1.9	3.2	3.7	1.8
Taxes on Goods & Services	149.4	91.6	88.2	130.2	118.6	127.8	133.5	113.9	123.5	106.3	84.0	109.7
Baux. sales(levy)	126.2	71.5	64.8	103.6	88.3	92.6	96.4	68.7	67.5	47.8	30.5	2.3
Bauxite mining	5.2	0.5	2.9	3.1	2.7	2.8	2.2	1.9	1.7	2.1	1.9	2.2
Liquor and Beer	7.2	7.2	7.1	7.8	8.2	10.7	11.7	14.0	13.7	18.9	18.1	14.3
Tobacco	2.7	2.8	3.3	3.9	6.0	8.9	6.4	7.9	13.0	12.8	12.8	13.0
Motor vehicle tax	2.7	2.8	3.3	3.9	6.0	8.9	6.4	7.9	13.0	12.8	12.8	13.0
Stamp duties	2.4	2.7	3.4	3.9	4.8	4.1	5.9	8.8	8.1	7.0	5.4	5.3
Others	2.1	2.4	2.2	2.5	2.9	2.7	4.6	5.2	11.2	8.4	5.7	62.4
Tax. on Int. Trade	72.9	94.9	122.1	131.0	132.0	143.9	164.3	173.6	133.1	139.2	124.1	120.8
Import duties	54.8	85.3	111.1	118.8	118.5	128.7	148.4	156.9	118.6	125.7	112.5	108.2
Statistical tax	8.0	9.5	10.9	12.1	13.3	14.9	15.7	15.4	13.5	12.3	10.7	11.7
Wood export tax	0.1	0.1	0.1	0.1	0.2	0.3	0.2	1.3	1.0	1.2	0.9	0.9
Non-Tax Revenues	27.3	32.8	39.6	40.8	68.1	76.8	75.6	141.8	91.7	99.3	112.1	123.9
Central Bank prof.	6.4	12.8	17.7	16.5	21.4	28.4	30.0	66.2	53.4	38.5	38.8	48.1
Receipts from Gov. Enterprises	7.4	12.2	10.0	11.6	19.9	25.9	13.7	18.7	17.5	20.4	31.8	24.5
Others	13.5	7.8	12.7	26.8	22.5	31.9	56.9	20.8	40.4	41.5	51.3	---
Total Revenues	298.3	288.2	339.4	415.9	435.7	490	504.6	564.3	487.4	499.6	491.1	498.9

Source: Ministry of Finance and Central Bank of Suriname.



SURINAME: SUMMARY OF THE BANKING SYSTEM, 1975-1986

(in millions of Suriname Guilders: December 31)

II.4.1

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Net International Reserves	205.2	242.3	211.2	281.9	333.9	397.6	424.5	359.7	162.7	-26.8	-74.4	-141.5
Assets	212.2	257.1	229.0	311.7	371.0	431.9	461.1	403.1	195.1	100.6	90.6	78.2
Liabilities	7.0	14.8	17.8	29.8	37.1	34.3	39.6	43.4	32.4	127.4	164.9	219.6
Net Domestic Assets	146.9	224.1	342.6	397.1	440.3	442.7	567.7	733.2	1062.6	1450.0	1887.3	2397.9
Net claims on the public sector	14.1	18.4	81.6	60.5	40.3	19.6	73.7	167.5	472.7	803.9	1150.6	1607.8
Assets	68.2	147.9	205.0	80.3	73.8	54.3	103.2	202.7	509.6	826.9	1185.9	1636.5
Liabilities	54.1	129.5	123.4	19.8	33.5	34.7	29.5	35.2	36.9	23.0	35.3	28.6
Office Capital & Surpluses	-14.5	-22.0	-22.0	-22.0	-22.0	-27.0	-32.0	-34.5	-34.5	-34.5	-34.5	-34.5
Credit to Private Sector	157.4	230.3	384.5	361.0	421.1	460.9	546.6	624.1	643.8	627.5	689.8	727.6
Net unclassified assets	-10.1	-4.0	-1.7	-2.4	0.9	-10.8	-20.6	-24.7	-19.4	53.2	81.5	97.0
Assets = Liabilities	352.1	466.4	553.8	679.0	774.2	840.3	992.2	1092.9	1225.3	1423.3	1812.9	2256.4
Unrequited Foreign Exchange Reserves and Long Term Foreign Liabilities	19.7	18.2	17.5	40.9	47.7	53.9	57.0	57.2	85.4	78.0	83.3	92.3
Liabilities to Private Sector	7.4	8.9	6.3	6.5	6.6	6.8	6.6	7.0	7.0	7.0	7.0	7.0
Monetary Liabilities	325.1	439.3	530.1	631.7	719.8	779.8	928.4	1028.6	1132.8	1338.3	17226.0	2157.1
Currency in circulation	168.7	198.7	219.7	246.1	273.4	294.2	358.0	421.2	454.9	493.6	765.6	1159.5
Demand Deposits	88.6	109.6	125.3	145.1	156.3	177.8	197.0	268.1	265.0	305.2	405.4	516.2
Other Liabilities	80.1	89.1	94.4	101.0	117.1	116.4	161.0	153.1	169.9	188.4	360.2	643.3
Quasi-money	132.9	211.1	266.3	329.8	380.0	410.4	486.2	511.1	574.7	736.5	832.3	863.8
Other Liabilities	124.5	201.2	254.6	308.8	345.5	372.2	437.3	461.4	523.2	598.1	670.5	680.8
Private Capital & Surplus	8.4	9.9	11.7	21.0	34.5	38.2	48.9	49.7	51.5	138.4	161.8	183.0
Private Capital & Surplus	23.5	29.5	44.1	55.8	66.4	75.0	84.2	96.3	103.2	108.2	124.6	133.8

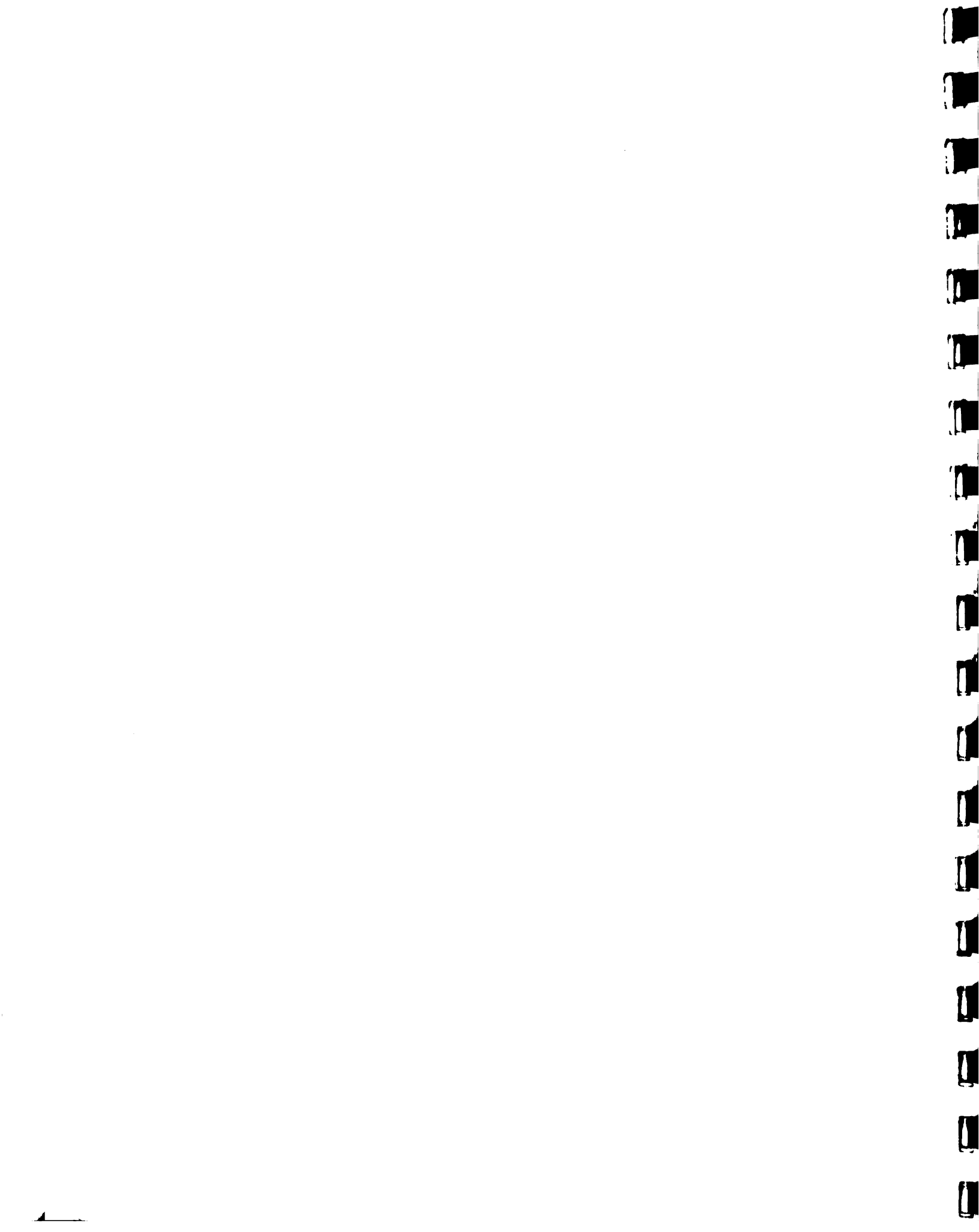


SURINAME: SUMMARY OF THE BANKING SYSTEM, 1975-1986

(in millions of Suriname Guilders: December 31)

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Net International Reserves	172.7	205.9	177.3	229.7	294.3	338.8	370.4	315.0	139.4	-13.7	-45.3	-69.5
Assets	172.8	206.1	177.4	237.3	304.3	339.2	370.8	315.4	139.7	70.6	70.0	70.4
Liabilities	0.1	0.2	0.1	7.6	10.0	0.4	0.4	0.4	0.3	84.3	115.3	139.9
Net Domestic Assets	-28.6	-28.1	37.1	10.0	-5.1	-42.9	-15.5	69.5	368.8	718.5	1084.9	1528.5
Net claims on the public sector	0.6	7.2	70.2	43.9	30.5	8.3	57.3	149.8	431.1	700.7	1039.9	1480.0
Office Capital & Surpluses	-14.5	-22.0	-22.0	-22.0	-22.0	-27.0	-32.0	-34.5	-34.5	-34.5	-34.5	-34.5
Credit to Commercial Bank	0.3	0.3	0.2	0.3	0.3	0.2	0.2	0.2	0.2	0.1		
Credit to Private Sector	0.8	0.7	0.6	0.6	0.5	0.4	0.3	0.2	0.2	0.1		
Net unclassified assets	-15.8	-14.3	-11.9	-12.8	-14.4	-24.8	-41.3	-46.2	-28.2	52.2	79.4	83.1
Assets = Liabilities	144.1	177.8	214.4	239.7	289.2	295.9	354.9	384.5	508.2	704.8	1039.6	1459.0
Counterpart	19.7	18.2	18.5	40.9	47.7	53.9	57.0	57.2	85.4	78.0	83.3	62.3
Unrequited ForeignExchange Liabilities to Commercial Bank	33.4	48.7	69.6	52.2	79.9	53.3	79.1	53.9	152.6	316.1	543.2	827.1
Currency	8.3	11.9	14.0	14.6	17.0	16.6	20.7	25.1	27.7	26.4	29.4	46.8
Demand Deposits	25.1	36.8	55.6	37.6	62.9	36.7	58.4	28.6	124.9	289.9	514.3	799.8
Liabilities to Private Sector	91.0	110.8	127.4	146.6	161.5	188.6	216.6	273.4	270.0	310.7	413.1	539.2
Currency	88.6	109.6	125.3	145.1	156.3	177.8	197.8	268.1	265.0	305.2	405.4	516.2
Demand Deposits	2.4	1.2	2.1	1.5	5.2	10.8	21.6	5.3	5.0	5.5	7.7	23.4
Reserve Money	124.4	159.6	195.9	198.8	241.5	242.0	297.9	327.3	422.8	626.8	956.3	1366.7

Source: Central Bank of Suriname.



SURINAME: SUMMARY OF THE BANKING SYSTEM, 1975-1986

(in millions of Suriname Guilders: December 31)

II.4.3

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Net International Reserves	32.5	36.4	33.9	52.2	39.6	58.8	54.1	44.7	23.3	-13.1	-29.1	-72.0
Assets	39.4	51.0	51.6	74.4	66.7	92.7	93.3	87.7	55.4	30.0	20.6	7.8
Liabilities	6.9	14.6	17.7	22.2	27.1	33.9	39.2	43.0	32.1	43.1	49.6	79.7
Monetary Reserves & Monetary Holdings	33.4	49.1	70.0	52.2	79.9	53.3	79.1	53.9	152.6	316.1	543.2	827.1
Net Domestic Assets	175.8	252.5	305.7	387.4	445.7	485.8	503.4	663.8	694.8	731.5	802.4	869.3
Net claims on the public sector	13.5	11.2	11.4	16.6	9.8	11.3	16.4	17.6	41.6	103.1	110.6	127.8
Credit to Private Sector	156.6	229.6	283.9	360.4	420.6	460.5	546.3	623.9	643.6	627.4	689.8	727.6
Net unclassified assets	5.7	11.7	10.4	10.4	15.3	14.0	20.7	21.5	8.8	1.0	2.0	13.9
Assets = Liabilities	241.7	338.0	409.6	491.0	565.2	597.9	716.6	762.4	669.9	1034.8	1316.6	1643.9
Medium and Long Term Foreign Liabilities	7.4	8.9	6.3	6.5	6.6	6.8	6.6	7.0	7.0	7.0	7.0	7.0
Liabilities to Monetary Authorities	0.3	0.3	0.2	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	19.4
Liabilities to Private Sector	234.1	328.5	402.7	485.1	558.3	591.0	709.8	755.2	662.8	1027.6	1309.4	1617.5
Demand Deposits	77.7	87.9	92.3	99.5	111.9	105.6	139.4	147.8	184.9	182.9	352.5	619.9
Other Liabilities	156.4	240.6	310.4	385.6	446.4	485.4	570.4	607.4	477.9	644.7	956.9	1007.6
Time and saving deposits	124.5	201.2	254.6	308.8	345.5	372.2	437.3	461.4	523.2	598.1	670.5	680.8
Other	8.4	9.9	11.7	21.0	34.5	38.2	48.9	49.7	51.5	138.4	161.8	183.0
Private Capital & Surplus	23.5	29.5	44.1	55.8	66.4	75.0	84.2	56.3	103.2	108.2	124.6	133.8

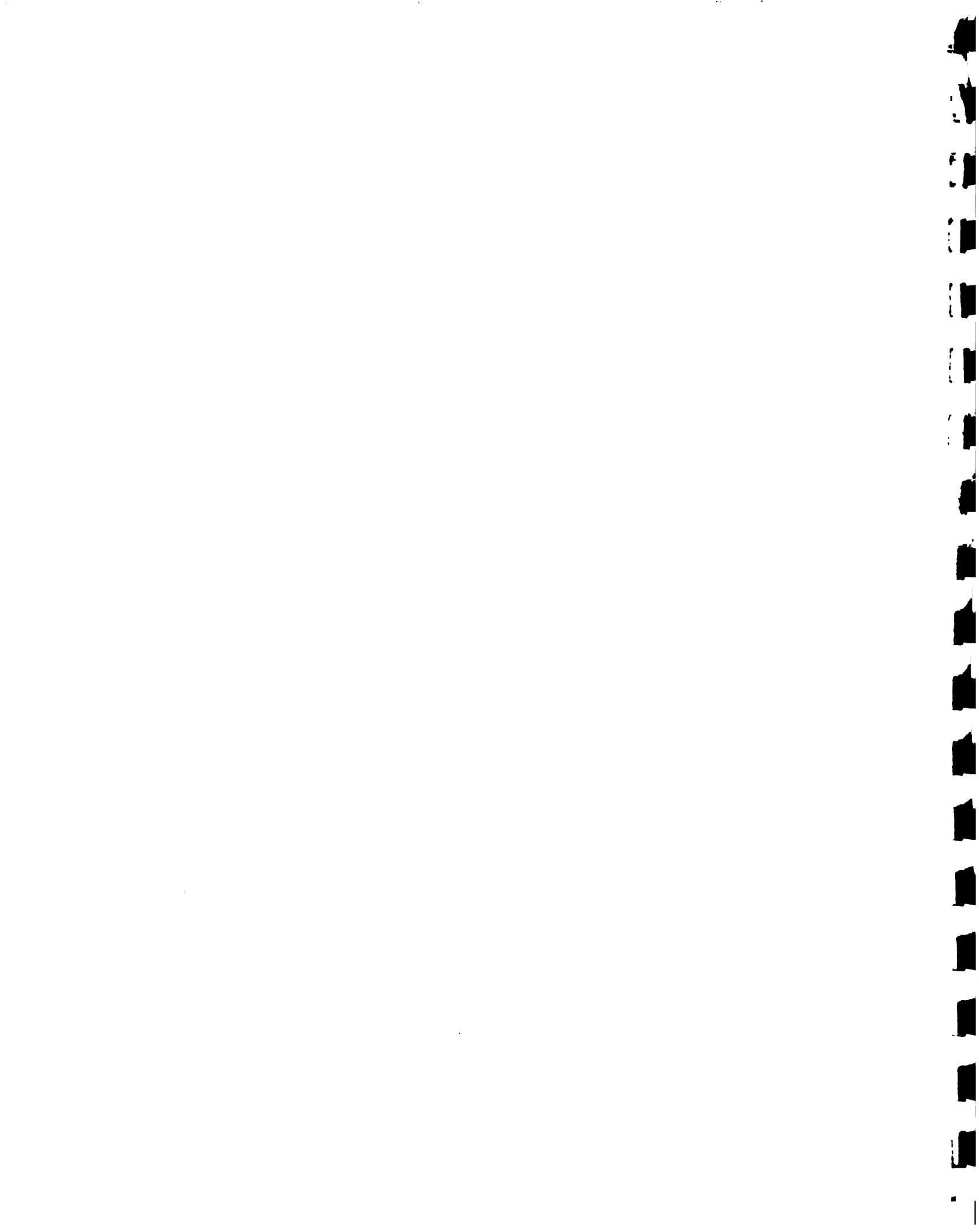


SURINAME. SUMMARY: Commercial Bank Credit by Sector, 1975-1986

(in millions of Suriname Guilders)

II.4.4

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	
Total Credit Outstanding	171.8	226.4	382.1	376.5	438.1	477.9	567.5	645.0	692.0	736.6	812.7	869.1	
Agriculture	11.0	19.9	30.3	39.2	54.1	68.3	88.5	99.9	119.9	142.6	157.6	171.0	
Fisheries	4.3	2.8	1.5	0.4	0.5	0.6	0.6	0.6	0.9	3.5	5.6	5.9	
Forestry	0.1	0.6	0.7	1.7	1.6	1.6	0.8	0.7	0.6	0.5	0.8	2.1	
Mining	9.6	28.9	28.3	25.4	27.6	24.2	37.0	41.4	35.8	46.4	37.4	40.0	
Manufacturing	32.2	25.1	30.5	37.2	44.3	49.9	51.1	50.8	52.6	58.3	70.3	69.7	
Construction	4.8	8.1	11.0	15.6	21.3	22.7	17.8	20.7	20.2	22.6	20.2	22.7	
Electricity, Gas & Water	9.7	10.8	13.4	20.3	19.2	24.7	26.2	24.3	23.6	25.1	20.0	12.6	
Commerce	54.9	73.3	94.7	122.5	136.0	150.3	177.6	197.5	189.7	156.1	154.7	157.1	
Transport & Communication	2.8	5.4	7.5	9.4	12.6	9.3	8.4	10.5	12.0	14.4	16.2	15.0	
Services	5.4	8.6	10.0	9.2	16.5	16.4	21.0	24.8	28.6	32.5	38.3	43.2	
Other (including housing)	37.0	42.9	74.2	95.9	105.9	138.5	173.8	208.1	234.6	291.6	329.9		
						(In percent of total)							
Agriculture	6.4	8.8	7.9	10.4	12.3	14.3	15.6	15.5	17.3	19.4	19.4	19.7	
Fisheries	2.5	1.2	0.4	0.1	0.1	0.1	0.1	0.1	0.1	0.5	0.7	0.7	
Forestry	0.1	0.3	0.2	0.4	0.4	0.3	0.1	0.1	0.1	0.1	0.1	0.2	
Mining	5.6	12.8	7.4	6.7	6.3	5.1	6.5	6.4	5.2	6.3	4.6	4.6	
Manufacturing	18.7	11.1	8.0	9.9	10.1	10.4	9.0	7.9	7.6	7.9	8.7	8.0	
Construction	2.8	3.6	2.9	4.1	4.9	4.7	3.1	3.2	2.9	3.1	2.5	2.6	
Electricity, Gas & Water	5.6	4.8	3.5	5.4	4.4	5.2	4.6	3.8	3.4	3.4	2.5	1.4	
Commerce	32.0	32.4	24.8	32.5	31.0	31.5	31.3	30.6	27.4	21.2	19.0	18.4	
Transport & Communication	1.6	2.4	2.0	2.5	2.9	1.9	1.5	1.6	1.7	2.0	2.0	1.7	
Services	3.1	3.8	2.6	2.4	3.8	3.4	3.7	3.8	4.1	4.4	4.7	5.0	
Other (including housing)	21.5	18.9	19.4	25.5	24.0	23.0	24.4	26.9	30.1	31.8	35.9	38.0	
						(Annual Percentage change)							
Total Credit Outstanding	4.6	31.8	68.8	-1.5	16.4	9.1	18.7	13.7	7.3	6.4	10.3	6.9	



SURINAME: Loans and Deposits of Commercial
Banks by Interest Rates

II.4.5

Rates in Percent per Annum		December 31				
		1982	1983	1984	1985	1986
(In thousands of Suriname Guilders)						
TOTAL		643314	690178	735028	810816	867393
Lending Rate						
	Up to 2	510	32018	6079	3352	4072
	2-3	2924	5278	20107	39345	58887
	3-4	175	181	30112	30095	30094
	4-5	6052	7911	7233	1164	545
	5-6	9051	8257	9757	19382	20648
	6-7	45060	32380	19859	22095	17778
	7-8	57992	70760	48216	46164	66847
	8-9	239704	230699	256192	262947	226327
	9-10	220579	226910	260276	293138	337827
	Over 10	61287	75684	85206	93134	105168
	Total interest earnings 1/	58653	61204	65941	71790	76456
	Average effective rate	9.1	8.9	9.0	8.9	8.8
TOTAL		690990	792116	969735	1269988	1456920
Deposit rate						
	Up to 2	180123	227474	317973	558897	738663
	2-3	500	500	500	4499	9227
	3-4	214570	224575	275554	326763	344773
	4-5	42563	55870	56356	36863	33553
	5-6	39292	44392	37302	45367	59301
	6-7	45640	41511	57847	78092	80882
	7-8	148314	163037	180171	175322	147538
	8-9	18874	34757	44032	43387	43573
	9-10	1024			888	210
	Over 10	29192	32983	44878	37701	37064
	Total interest payments 1/	4.2	4.2	4.6	3.0	2.5
	Average effective rate					
(In percent of total)						
Lending Rate						
	Up to 2	0.1	4.6	0.8	0.4	0.5
	2-3	0.5	0.8	2.7	4.9	6.7
	3-4			4.1	3.7	3.5
	4-5	0.9	1.1	1	0.1	0.1
	5-6	1.4	1.2	1.3	2.4	2.4
	6-7	7	4.7	2.7	2.7	2
	7-8	9	10.3	5.5	5.7	7.7
	8-9	37.3	33.4	34.9	32.4	26.1
	9-10	34.3	32.9	35.4	36.2	38.9
	Over 10	9.5	11	11.6	11.5	12.1
Deposit rate						
	Up to 2	26.1	28.7	32.8	44	50.7
	2-3	0.1	0.1	0.1	0.4	0.6
	3-4	31.1	28.4	28.4	25.7	23.7
	4-5	6.2	7.1	5.8	2.9	2.3
	5-6	5.7	5.6	3.8	3.6	4.1
	6-7	6.6	5.2	6	6.1	5.5
	7-8	21.5	20.6	18.6	13.8	10.1
	8-9	2.7	4.4	4.5	3.4	3
	9-10	0.1			0.1	

Source: Central Bank of Suriname



GROWTH OF THE POPULATION DURING THE PERIOD 1972-1985

II.5.1

YEAR	BEGIN OF POPULATION	BIRTH	MORTALITY	NATURAL ACCRETION	IMMIGRATION	EMIGRATION	MIGRATION BALANCE	GROWTH	END POPULATION	AVERAGE POPULATION	GROWTH %
1972	379607	12557	2602	9955	2615	8490	-5875	4080	383687	381647	1.1
1973	383.687	11881	2737	9144	2442	11098	-8656	488	384175	383951	0.1
1974	384175	11809	2460	9349	3066	17902	-14836	-5487	378688	381432	-1.4
1975	378688	10031	2670	7361	3959	39699	-35740	-28379	350309	364499	-7.5
1976	350309	11176	2593	8583	5345	5757	-412	8171	358480	354395	2.3
1977	358480	11099	2516	8583	3430	4786	-1356	7227	365707	362094	2.0
1978	365707	10673	2730	7943	2681	7288	-4707	3236	368943	367325	0.9
1979	368943	10586	2699	7887	2372	18162	-15790	-7903	361.04	364992	-2.1
1980	361040	9848	2192	7656	2282	18988	-16706	-9050	351990	356515	-2.5
1981	351990	10094	2441	7655	3338	4432	-1094	6559	358549	355270	1.9
1982	358549	11205	2506	8699	3706	3431	275	8974	367523	363036	2.5
1983	367523	11823	2811	9012	2805	5225	-2420	6592	374115	370819	1.8
1984	374115	11503	2873	8630	3393	3488	-95	8535	382650	378363	2.3
1985	382650	11704	2674	9030	1902	5321	-3419	5611	388261	385456	1.5

SOURCE: a. C.B.S.

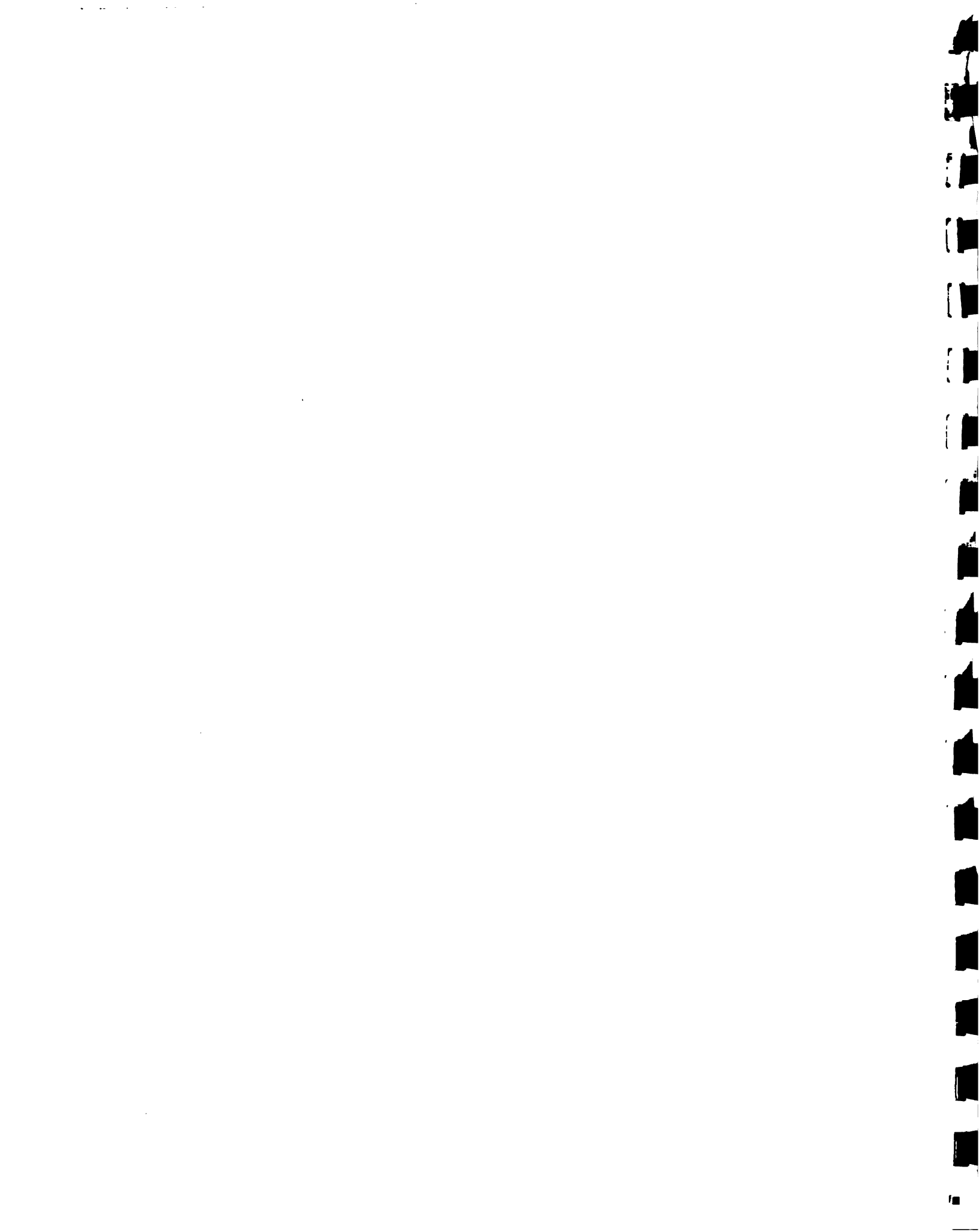
Estimate of Population per 1 July 1986: 387.114

b. C.B.S. - Ned.

(Use by average growth percentage of 2% in one year in the period 1981-1985)

c. C.B.S. - Ned.

REMARK: The migration figures from C.B.S. concern only the migration between Suriname and Holland.

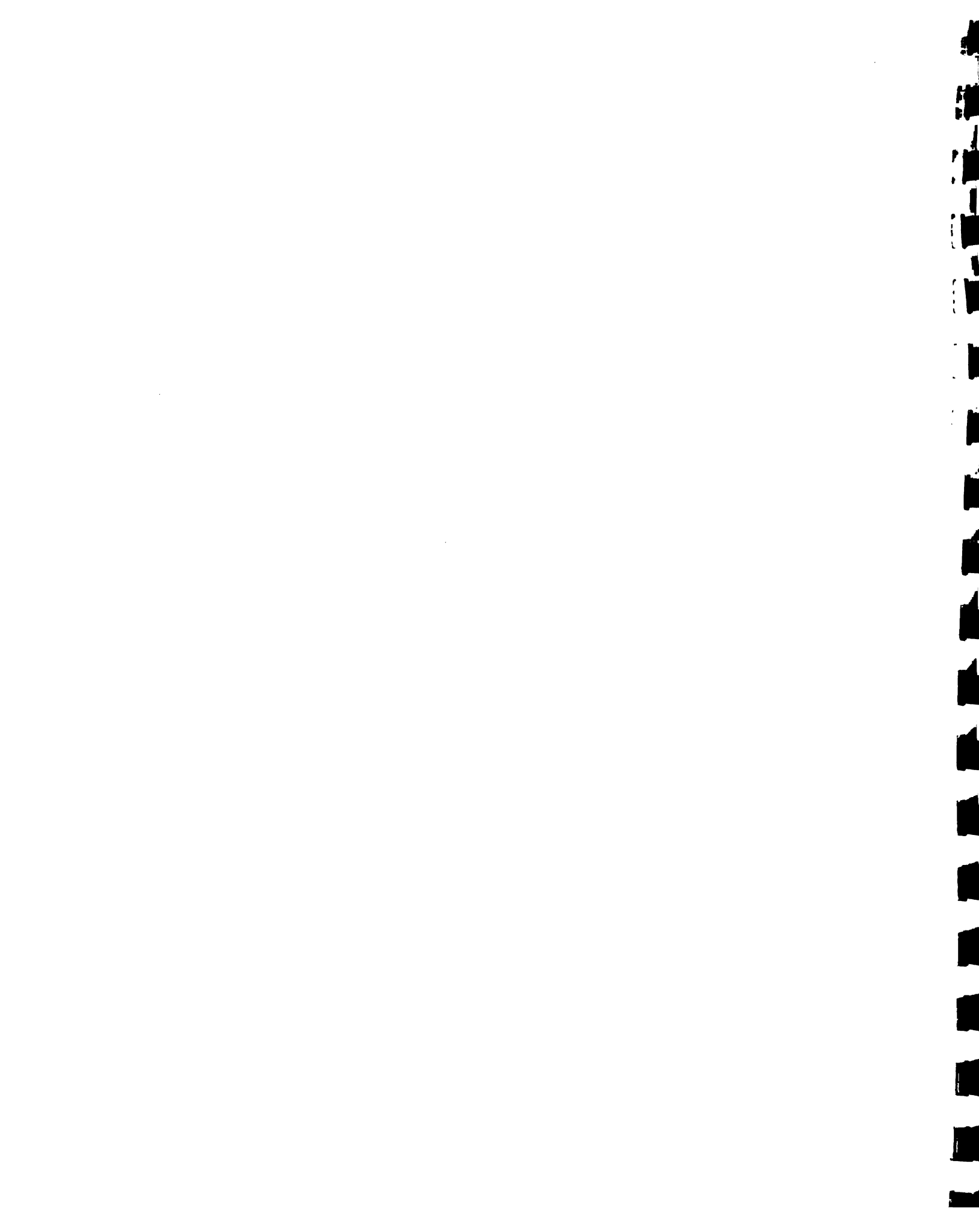


II.5.2

POPULATION BY AGE, SEX AND DISTRICT
(INCL. LIMITED COUNTING)

DISTRICT	NICKERIE		CORONIE		SARAMACCA SURINAME		PARAMARIBO		BROKOPONDO PARA		COMHEWIJNE MAROWIJNE		TOTAL							
	MAN	WOMAN	MAN	WOMAN	MAN	WOMAN	MAN	WOMAN	MAN	WOMAN	MAN	WOMAN		MAN	WOMAN					
0 - 14	7274	7175	558	501	2166	2117	33247	32253	11029	10968	4648	4958	3071	2914	2870	2757	5516	5510	70379	69153
15 - 29	5038	4978	360	310	1389	1271	26380	25778	10946	11108	1392	2545	2210	2007	2056	1844	2106	2960	51877	52801
30 - 49	3059	3092	158	174	894	963	14982	15777	5685	6220	1120	1974	1308	1291	1276	1242	1731	2303	30213	33036
50	1914	1688	362	341	803	699	8597	8537	5122	6332	1145	1794	1073	919	1233	1011	1474	1426	21723	22747
Unknown	139	140	8	7	24	22	551	553	328	267	257	435	63	34	26	40	226	191	1622	1689
TOTAL	17424	17073	1446	1333	5276	5072	83757	82898	33110	34895	8562	11706	7725	7165	7461	6894	11053	12390	175814	179426

SOURCE: GENERAL BUREAU OF STATISTICS



SURINAME: DEVELOPMENT OF UNEMPLOYMENT 1980-1982

II.5.3

PERIOD	NUMBER OF PERSONS 15 YRS & OLDER	ECONOMI- CALLY ACTIVE	UNEMPLOYED ABS %		LABOUR POTENTIALS	PART RATIO
MID-1980	215384	83456	14229	14.6	97685	0.45
1980 (end)	217471	83700	14180	14.5	97880	0.45
1981 (end)	226719	87000	15000	14.7	102000	0.45
1982 (end)	236432	87300	19000	17.9	106300	0.45

Sources: Census 1980
 Population Statistics (C.B.S.)
 Central Bureau Population registration (C.B.B)
 Compilation: Planning Bureau



SURINAME: NUMBER OF AVAILABLE POSITIONS BY SECTOR, 1975-1986

II.5.4

PREL

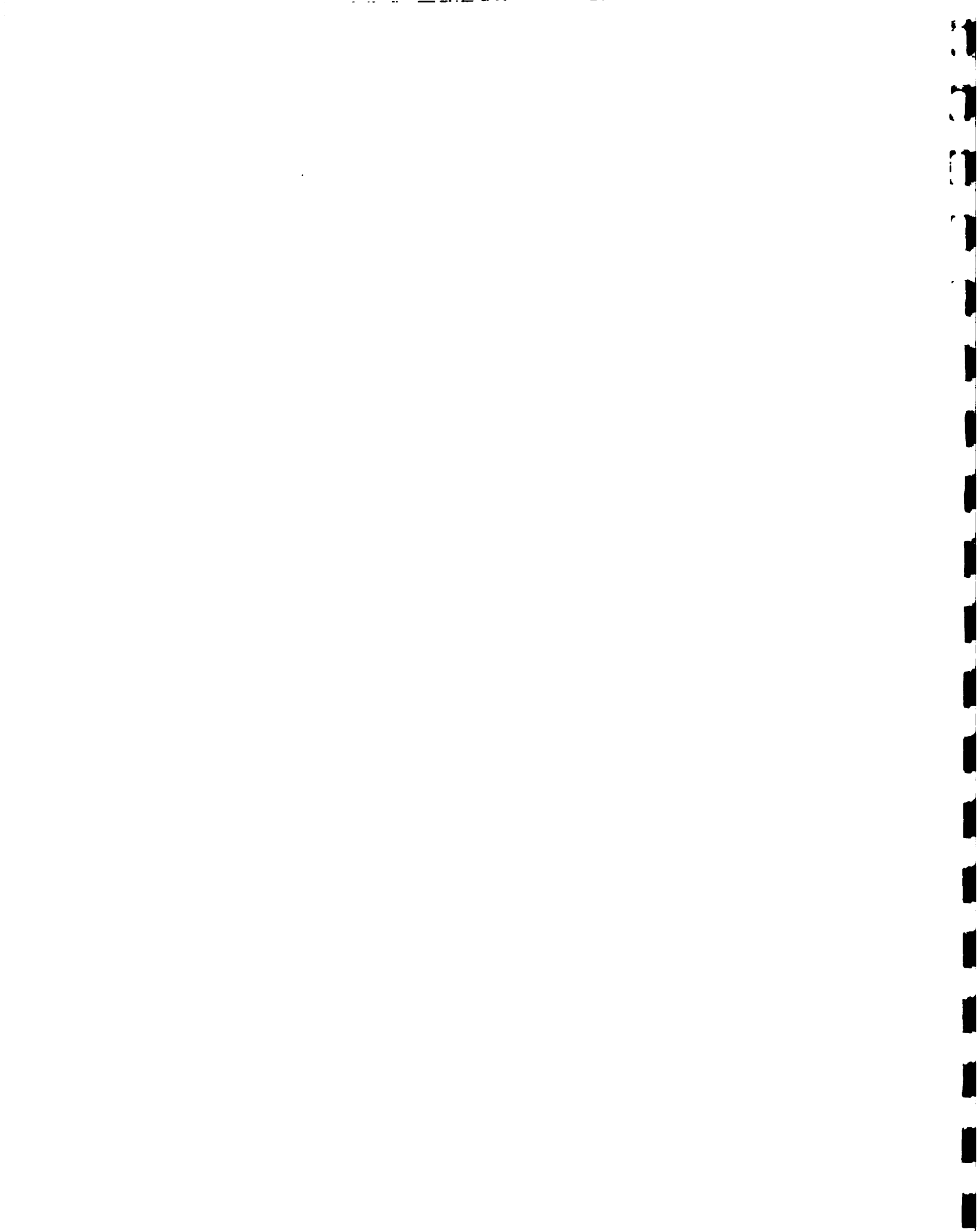
1975 1976 1977 1978 1979 1980 1981 1982 1983 1984 1985 1986

(Average number of jobs)

Total	91400	93600	98400	102300	102100	98540	98660	102310	101890	99450	99650	95820
Agricultural, Livestock and Fisheries	15300	14700	14500	14200	13900	13900	14040	13950	13860	13770	13570	13320
Forestry	1800	1800	1800	2500	3200	3200	3140	3180	3220	2930	2680	2250
Mining & Bauxite Processing	6900	6800	6700	6200	6000	6000	6000	5520	4990	4810	4430	3840
Manufacturing	9800	9800	10100	10500	10400	11180	10950	11070	11180	10960	10630	10170
Construction	4300	4600	5200	4200	3500	3500	3800	3600	3100	2800	3000	2800
Gas, Water & Electricity	1100	1100	1100	1100	1100	1260	1320	1370	1410	1420	1390	1400
Trade & Tourism	14200	13900	15000	15300	14900	14500	14370	14760	14020	12840	11660	10150
Transportation & Communication	3500	3000	2800	3600	3600	3700	3700	3790	3720	3830	3790	3770
Financial Situations	1700	1800	1900	2000	2200	2300	2420	2420	2100	2100	2270	2030
Government	29400	32700	35900	39000	39600	35200	35430	39080	40560	40190	42590	42590
Other Services	3400	3400	3400	3700	3700	3800	3490	3570	3730	3800	3640	3500

(Share by sector)

Agricultural, Livestock and Fisheries	16.7	15.7	14.7	13.9	13.6	14.1	14.2	13.6	13.6	13.8	13.6	13.9
Forestry	2.0	1.9	1.8	2.4	3.1	3.2	3.2	3.1	3.2	2.9	2.7	2.3
Mining & Bauxite Processing	7.5	7.3	6.8	6.1	5.9	6.1	6.1	5.4	4.9	4.8	4.4	4.0
Manufacturing	10.7	10.5	10.3	10.3	10.2	11.3	11.1	10.8	11.0	11.0	10.7	10.6
Construction	4.7	4.9	5.3	4.1	3.4	3.6	3.9	3.5	3.0	2.8	3.0	2.9
Gas, Water & Electricity	1.2	1.2	1.1	1.1	1.1	1.3	1.3	1.3	1.4	1.4	1.4	1.5
Trade & Tourism	15.5	14.9	15.2	15.0	14.6	14.7	14.6	14.4	13.8	12.9	11.7	10.6
Transportation & Communication	3.8	3.2	2.8	3.5	3.5	3.8	3.8	3.7	3.7	3.9	3.8	3.9
Financial Situations	1.9	1.9	1.9	2.0	2.2	2.3	2.5	2.4	2.1	2.1	2.3	2.1
Government	32.2	34.9	36.5	38.1	38.8	35.7	35.9	38.2	39.8	40.4	42.7	44.4
Other Services	3.7	3.6	3.5	3.6	3.6	3.9	3.5	3.5	3.7	3.8	3.7	3.7



PERSONS WHO FOLLOW EDUCATION BY SCHOOLTYPE, DISTRICT AND SEX (1980) II.5.5

WOMAN		TOTAL PARAMARIBO		NICKERIE		CORONIE		SARAMACCA		SURINAME		COMHEWIJNE		MAROWIJNE		BROKOPONDO		PARA	

SCHOOLTYPE																			

PRE PRIMARY																			

- Kindergarten	7460	1281	791	59	243	3743	345	418	235	345									

PRIMARY																			

- Primary	34196	5380	3830	266	1208	17213	1423	2138	1237	1501									
- Special Education	312	116	14			161	1	5	15										

JUNIOR SECONDARY																			

- Elementary Vocational	21	7				11	1			2									
- Vocational Domestic Science	383	109	1		1	244	1			27									
- Technical	93	16	1		1	64	1			10									
- General Vocational	4869	838	583	80	142	2501	252	201	6	266									
- General	7887	1819	696	15	173	4391	218	242	3	330									

SENIOR SECONDARY																			

- Commercial College	513	167	5		4	309	6	1		21									
- Technical College	71	19			3	46				3									
- Teachers Training College	766	269	20	2	7	425	14	3	2	24									

PRE-UNIVERSITY COLLEGE I																			

	450	190	10	1	2	225	2	3		17									

PRE-UNIVERSITY COLLEGE II																			

	589	253	9		3	309	5			10									

TERTIARY EDUCATION																			

- Higher Vocational Education	210	99			3	98	1	3	3	3									
- University	1756	476	231	20	36	727	85	80	51	50									
- Unknown																			

TOTAL	59576	11039	6191	443	1826	30467	2355	3094	1537	2624									

SOURCE: GENERAL BUREAU OF STATISTIC



PERSONS WHO FOLLOW EDUCATION BY SCHOOLTYPE, DISTRICT AND SEX (1980)

MAN

II.5.6

SCHOOLTYPE ----- TOTAL PARAMARIBO NICKERIE CORONIE SARAMACCA SURINAME COMHEWIJNE MAROWIJNE BROKOPONDO PARA -----

PRE PRIMARY -----

- Kindergarten 7580 1230 809 56 221 3824 344 456 270 370 -----

PRIMARY -----

- Primary 37252 5520 3960 330 1305 18453 1669 2574 1710 1731
 - Special Education 570 202 26 1 1 292 7 6 1 34 -----

JUNIOR SECONDARY -----

- Elementary Vocational 143 34 5 2 73 11 1 17
 - Vocational Domestic Science 39 12 1 25
 - Technical 3127 682 40 2 2157 52 3 4 154
 - General Vocational 3042 622 360 35 136 197 126 3 203
 - General 5950 1375 599 9 118 3264 143 212 5 225 -----

SENIOR SECONDARY -----

- Commercial College 363 110 2 4 235 1 11 11
 - Technical College 482 162 5 6 275 12 22
 - Teachers Training College 229 74 5 6 131 5 2 6 -----

PRE-UNIVERSITY COLLEGE I -----

- 376 138 6 1 216 3 3 9 -----

PRE-UNIVERSITY COLLEGE II -----

- 626 235 10 4 363 3 1 10 -----

TERTIARY EDUCATION -----

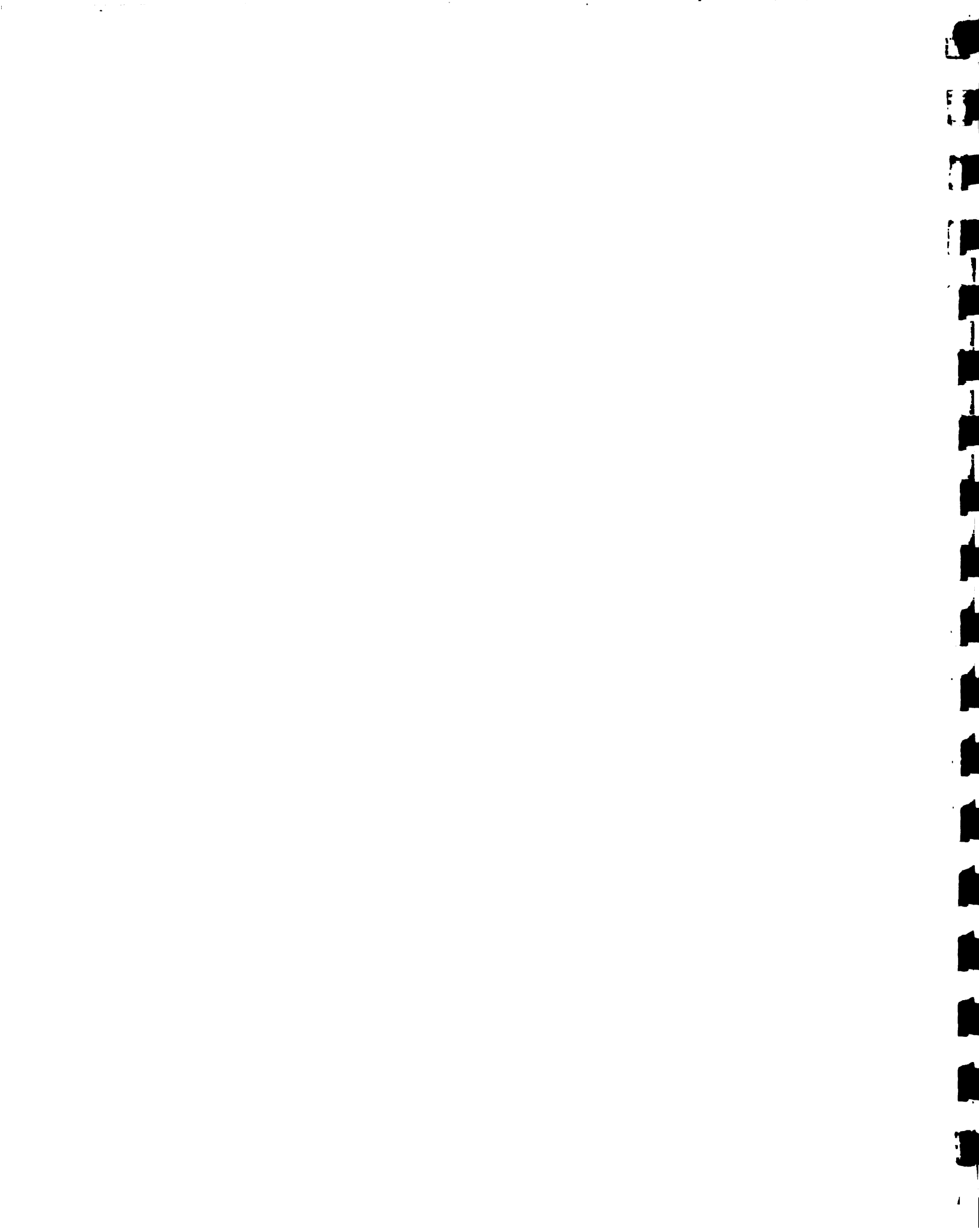
- Higher Vocational Education 289 117 1 1 157 2 3 6
 - University 1003 420 25 21 784 102 97 56 66 -----



SURINAME: AVERAGE GROSS LABOUR COST PER EMPLOYEE
PERIOD 1975 - 1985

	Percentage Change											Sf. per Employee	
	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	
Bauxite, Bauxite Processing	46.7	-8.8	17.0	17.9	18.4	1.5	14.0	23.7	12.8	17.0	-4.3	41679.0	
Manufacturing	32.2	78.6	18.1	8.3	8.7	15.2	14.8	11.3	2.3	6.9	2.0	16943.0	
Utilities	-3.1	14.1	10.5	24.1	11.7	-3.6	2.5	14.7	7.7	7.9	7.4	25109.0	
Construction	-23.8	55.2	39.4	107.2	-16.1	-21.0	20.0	-5.0	0.1	9.6	2.4	9319.0	
Commerce	-1.6	75.6	6.0	6.1	4.7	1.0	15.9	6.9	9.7	5.1	11.9	14976.0	
Transportation, Storage, and Communication	17.4	44.5	49.8	-13.8	1.4	30.6	24.0	12.0	19.4	1.2	12.5	29579.0	
Financial Institutions	19.5	21.8	11.1	-5.1	6.8	30.8	15.5	9.3	10.4	6.4	8.8	27295.0	
Government	-1.7	6.5	18.4	6.6	5.0	12.9	22.0	15.6	2.8	2.8	3.4	10080.0	
Memorandum Item													
C.P.I	8.3	9.3	8.8	8.0	14.0	13.2	8.7	7.3	4.4	3.7	10.9		

Source: General Bureau of Statistics, Planning Office.

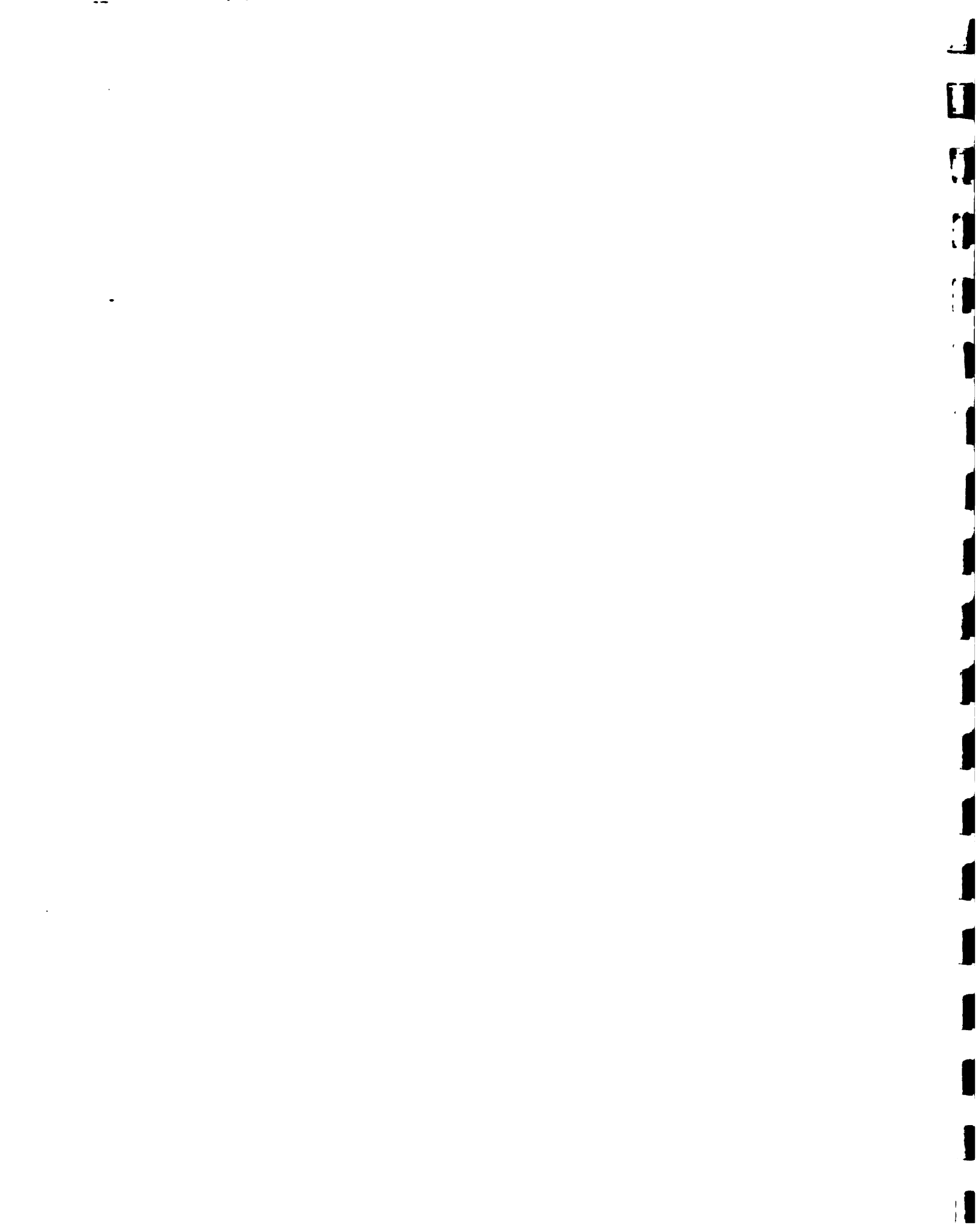


SURINAME-REVISED CONSUMER PRICE INDEX FOR PARAMARIBO AND SURROUNDING AREA, 1975-1986

II.5.8

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	
WEIGHTS	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	
Food & Bev.	40.0	158.5	172.7	183.9	191.4	214.3	238.2	258.1	266.5	278.5	282.5	310.3	389.7
Housing & Furnishing	23.6	141.6	150.0	160.1	185.6	207.2	238.8	236.3	261.9	276.2	283.2	334.8	387.7
Clothing & Footwear	11.0	130.0	152.2	182.8	208.2	256.9	279.0	345.4	373.2	396.2	432.0	460.2	527.5
Other	25.4	138.7	151.7	166.3	175.4	201.1	235.5	263.6	288.8	295.0	309.5	336.3	382.7
TOTAL	100.0	146.2	159.8	173.9	187.8	214.0	242.3	263.4	282.6	295.0	305.9	339.2	402.6
	(ANNUAL AVERAGE, APRIL 1968 - MARCH 1969 = 100)												
	(Percent Changes)												
Food & Bev.	9.0	6.5	4.1	12.0	11.2	8.4	3.3	4.5	1.4	9.8	25.6		
Housing & Furnishing	5.9	6.7	15.9	11.6	15.3	-1.0	10.8	5.5	2.5	18.2	15.8		
Clothing & Footwear	17.1	20.1	13.9	23.4	8.6	23.8	8.0	6.2	9.0	6.5	14.6		
Other	9.4	9.6	5.5	14.7	17.1	11.9	9.6	2.1	4.9	8.7	13.8		
TOTAL	9.3	8.8	8.0	14.0	13.2	8.7	7.3	4.4	3.7	10.9	18.7		

Source: Bureau of Statistics.



ANNEXES
TO CHAPTER III
THE AGRICULTURAL
SECTOR



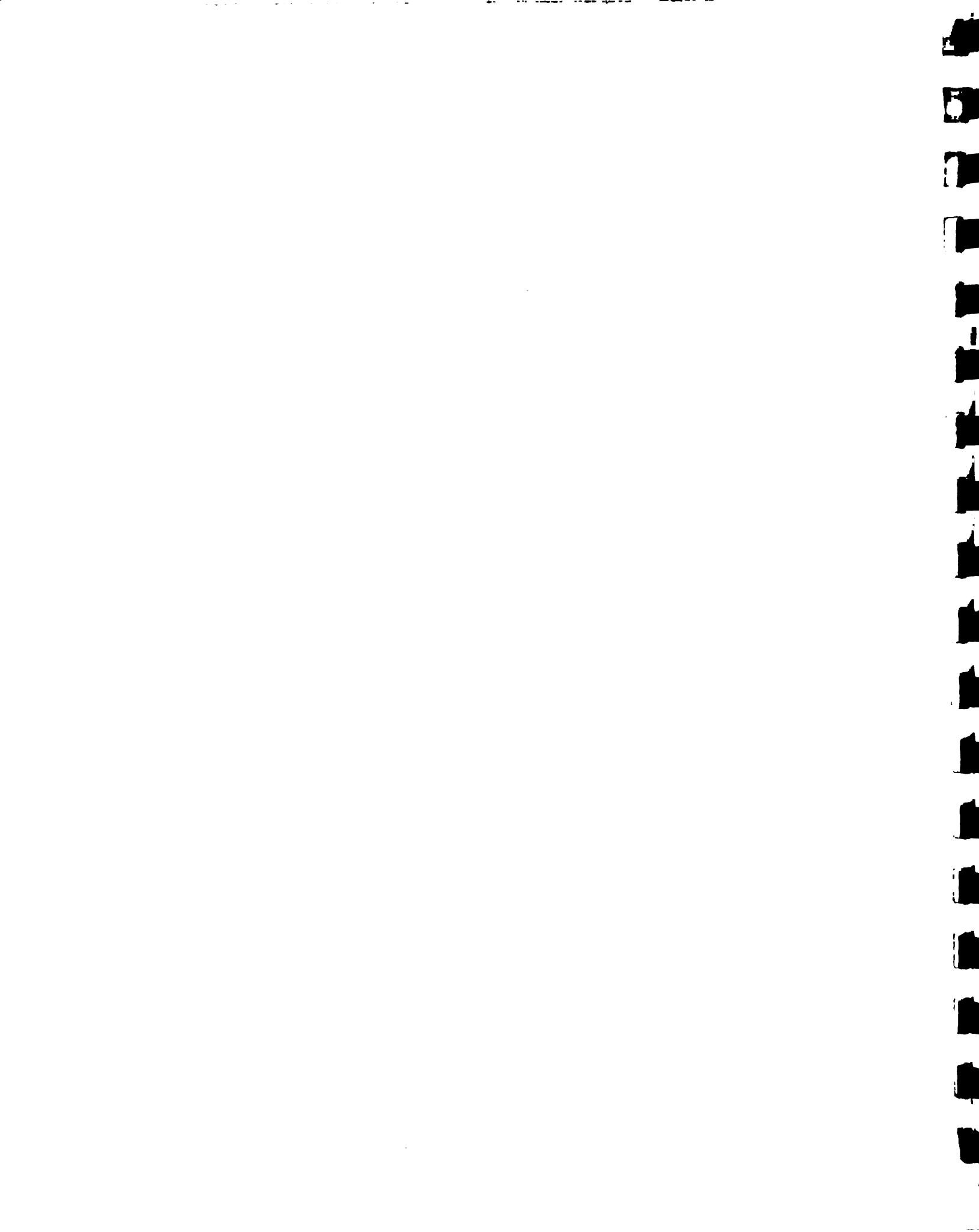
ANNEX TABLE III.1.1.1

AREA PLANTED TO MAJOR CROP (in hectares)

DESCRIPTION	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
ANNUAL CROPS												
Padi	47,500	48,400	49,700	55,200	58,855	64,956	70,823	72,571	73,343	74,770	74,890	75,136
Corn	146	94	110	140	158	183	204	135	122	222	153	177
Cassava	n.a	n.a	n.a	318	393	406	668	356	412	582	455	438
Other Groundnuts	371	402	400	134	132	161	210	123	131	160	134	87
Peanuts	326	242	282	245	285	208	339	344	328	485	497	627
Oardie	n.a	n.a	n.a	94	149	123	100	140	103	129	132	181
Other Pulses	129	83	136	62	74	66	191	41	36	41	50	69
Cabbage	37	68	70	55	52	66	85	67	51	60	67	44
Tomato	58	62	65	62	88	105	227	105	90	93	122	88
Other Vegetables	302	326	350	421	446	548	1,418	575	602	716	675	788
Other Annual Crops	n.a	n.a	n.a	181	173	177	408	192	217	257	191	162
TOTAL ANNUAL CROPS	48,869	49,677	51,113	56,912	60,885	66,999	74,673	74,649	75,435	77,515	77,360	77,797
BIENNIAL CROPS												
Sugar Cane	2,286	2,120	2,188	2,393	2,429	2,392	2,422	2,489	2,500	2,491	2,523	2,523
Banana	1,794	1,742	1,739	1,894	1,863	1,825	1,839	1,872	1,829	1,709	1,841	1,825
Plantains	124	201	250	216	272	284	600	337	326	452	341	265
Other Biennial Crops	6	5	5	10	5	10	59	132	100	30	40	43
TOTAL BIENNIAL CROPS	4,210	4,068	4,182	4,223	4,389	4,311	5,020	4,630	4,555	4,682	4,545	4,456
PERENNIAL CROPS												
Cacao	401	390	390	208	214	250	319	245	246	240	225	238
Coffee	420	360	360	209	199	152	345	195	229	247	236	249
Oil-Pala	1,641	1,710	1,880	2,025	2,372	2,614	2,948	4,199	4,954	5,747	6,187	6,128
Orange	1,479	1,450	1,480	1,536	1,517	1,534	1,634	1,437	1,395	1,535	1,683	1,735
Grape-fruit	400	390	390	228	220	226	145	160	182	212	185	182
Other citrus	144	140	140	130	162	173	175	174	198	235	278	248
Coconuts	1,105	1,110	1,100	1,000	973	1,097	1,339	1,236	1,104	1,206	1,200	1,342
Other Perennial crops	n.a	n.a	n.a	n.a	n.a	320	802	517	539	577	560	532
TOTAL PERENNIAL CROPS	5,590	5,550	5,730	5,336	5,657	6,366	7,907	8,163	8,827	9,999	10,570	10,654
GENERAL TOTAL	58,669	59,295	61,025	66,471	70,851	77,676	87,600	87,442	88,817	92,196	92,481	92,907
Of which:												
Farm related	24,190	23,208	24,862	25,211	24,728	27,233	33,256	30,204	28,115	27,694	31,359	30,209
Large scale	34,471	36,067	36,163	41,260	46,123	50,443	54,344	57,238	60,702	64,502	61,186	62,598

Source: Ministry of Agriculture, Livestock & Fisheries

† Estimate



III.1.2

AGRICULTURE PRODUCTION
(in tons)

TABLE III.1.2

DESCRIPTION	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
ANNUAL CROPS												
Padi (14% Humidity)	174,845	172,500	202,866	223,946	235,772	257,829	280,727	301,130	267,958	301,975	299,185	299,954
Corn	365	132	230	273	264	290	408	211	165	375	249	204
Cassava	n.a.	n.a.	n.a.	2,205	2,745	2,956	4,676	2,571	2,659	3,760	3,000	1,758
Other Groundnuts	2,300	1,699	2,208	537	542	622	1,470	586	708	804	818	211
Peanuts	391	290	338	250	286	210	339	344	257	485	449	467
Oerdie	n.a.	n.a.	n.a.	61	123	63	100	77	68	80	93	101
Other Pulses	91	41	84	72	53	50	191	36	35	40	48	35
Cabbage	250	264	560	606	573	516	680	500	355	500	680	299
Tomato	380	340	455	328	494	793	1,589	413	447	450	626	351
Other Vegetables	1,600	2,100	2,150	2,445	2,859	3,401	6,312	4,351	3,778	4,064	4,295	3,583
Other Annual Crops	n.a.	n.a.	n.a.	2,115	1,994	2,083	4,692	2,976	1,860	2,170	2,230	1,332
TOTAL ANNUAL CROPS	180,222	177,366	208,083	232,838	245,845	268,553	303,184	313,195	278,370	314,763	311,673	308,295
BIENNIAL CROPS												
Sugar Cane	159,543	146,685	135,325	119,760	164,060	146,399	146,327	125,391	128,823	130,625	118,225	110,967
Banana	44,192	42,966	31,508	33,063	31,214	39,226	44,703	42,399	36,598	41,063	43,139	43,744
Plantains	950	1,572	1,700	2,850	3,280	1,918	4,500	3,166	3,495	5,512	4,963	2,847
Other Biennial Crops	25	20	24	79	16	42	313	304	280	92	159	179
TOTAL BIENNIAL CROPS	204,710	191,163	168,557	155,752	198,570	187,585	195,843	171,260	169,196	177,292	166,486	157,737
PERENNIAL CROPS												
Cacao	55	58	61	47	83	65	75	30	35	40	36	34
Coffee	88	76	90	25	59	45	53	44	47	40	50	45
Oil-Palm	3,225	6,658	10,106	14,838	24,759	21,026	24,653	28,108	31,235	33,894	38,212	38,296
Orange	11,875	11,250	12,750	5,966	7,048	8,756	9,375	7,717	8,673	8,659	9,560	9,550
Grape-fruit	6,000	5,775	6,775	2,589	2,109	1,773	1,150	1,197	1,903	1,659	1,447	1,273
Other citrus	377	331	488	245	464	584	606	455	540	940	1,012	801
Coconuts	5,525	5,500	5,500	5,644	5,646	5,479	6,526	7,177	6,753	6,772	6,955	8,518
Other Perennial crops	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.b.
TOTAL PERENNIAL CROPS	27,145	29,640	35,770	29,274	49,160	37,728	42,438	44,808	49,166	52,004	57,272	50,517
GENERAL TOTAL	412,077	398,169	413,210	417,864	484,393	493,866	541,465	529,263	496,752	544,079	535,431	516,549

Source: Ministry of Agriculture, Livestock & Fisheries
Agricultural Statistics Division

Note: 1 ton Orange = 4,000 pcs.
1 ton grapefruit = 2,000 pcs.
1 ton coconut = 1,000 pcs.
1 ton other citrus = 6,350 pcs.

1] includes cassava

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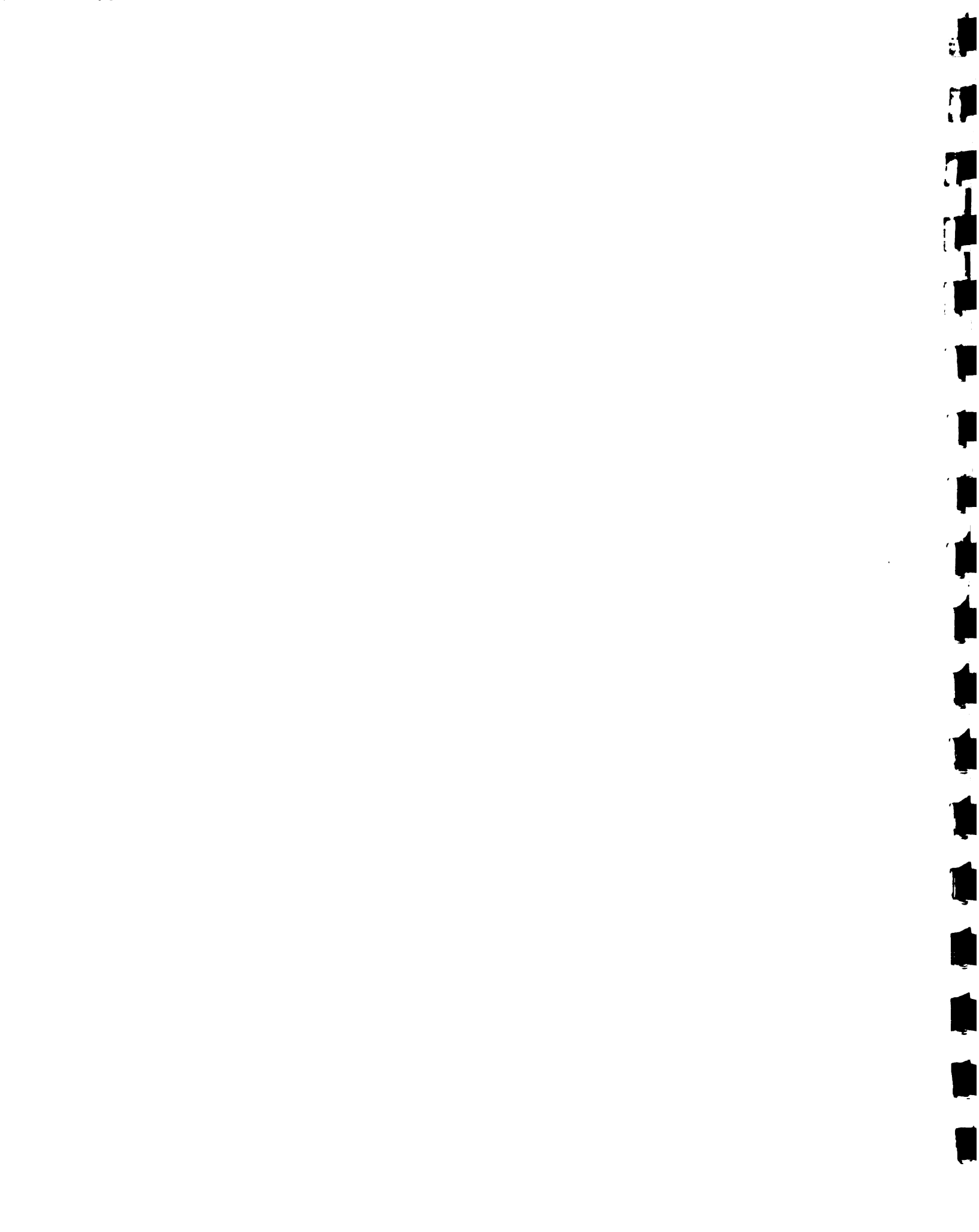
TABLE III.1.3

III.1.3

PUBLIC INVESTMENT (Sf. x 1000)
(preliminary figures - Sectoral, subdivision under review October 20, 1987)

SECTOR	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Agro-General (Bank etc.)		2,500	7,200	12,300	7,900	5,700	1,237				
Agriculture	3,675	6,925	10,074	12,024	20,548	28,383	40,562	41,862	34,572	27,314	22,810
Life-Stock	362	596	1,267	886	1,115	1,663	2,558	653	682	710	715
Fisheries			102	8	97	204	194	126	375	408	
Forestry	7,621	8,357	2,491	1,647	498	252	269	1			
Mining	1,117	1,212	627	627	598		371	112	148	4	
Manufacturing	4,458	2,357	5,082	11,718	16,722	2,260	13,527	3,050	4,491	2,280	1,152
Electricity - Water	16,566	11,431	6,699	10,004	1,805	4,474	7,749	3,035	1,696	848	373
Trade/Tourism				271	206	10	39		39	32	35
Transport	65,359	69,501	51,155	34,757	35,065	50,199	40,574	20,517	12,526	3,159	768
Housing	10,102	17,733	16,349	18,210	8,376	29,992	22,745	6,352	9,194	5,779	2,330
Government	18,713	26,167	44,664	30,786	29,685	48,839	51,240	23,953	14,014	8,337	3,468
Subsector private projects	10,124	6,401	5,872	18,804	8,303	9,202	14,164	7,544	5,735	1,435	485
TOTAL	138,097	153,180	151,582	152,042	130,918	181,178	195,229	107,205	83,472	50,306	32,136

Source: Planning Office (SPS)



PRODUCTION, VALUE AND DESTINATION OF FISHERY PRODUCTS

TABLE III.1.5

DESCRIPTION	UNIT	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
A. LOCAL FISHERY:													
Production of Shrimps	Ton	226.00	82.00	189.00	338.00	321.00	228.00	144.00	132.00	123.00	205.00	118.00	146.00
Production of Crabs	"	56.00	32.00	26.00	23.00	30.00	31.00	37.00	43.00	33.00	40.00	40.00	22.00
Production of Different fish species	"	3,240.00	3,230.00	3,400.00	2,885.00	2,618.00	2,127.00	2,285.00	2,151.00	2,395.00	2,788.00	2,249.00	2,379.00
PRODUCTION VALUE:													
Production value of Shrimps	sf 1000	194.00	107.00	251.00	393.00	382.00	282.00	200.00	219.00	214.00	360.00	240.00	658.00
Production value of Crabs	"	44.00	36.00	38.00	32.00	50.00	54.00	56.00	80.00	54.00	59.00	72.00	48.00
Production value of Different fish species	"	2,758.00	2,822.00	3,364.00	3,894.00	3,142.00	2,847.00	3,202.00	3,014.00	3,377.00	3,725.00	3,540.00	6,470.00
B. SEA-FISHING:													
No. of Trawlers	pcs.	150.00	190.00	190.00	175.00	181.00	133.00	155.00	160.00	167.00	163.00	140.00	131.00
PRODUCTION AND VALUE:													
Production of Shrimps	Ton	3,544.00	4,093.00	4,105.00	2,708.00	3,164.00	3,096.00	3,777.00	3,710.00	3,289.00	2,754.00	2,413.00	3,289.00
Production per Trawler	"	23.63	21.54	21.61	15.47	17.50	23.30	22.90	23.20	19.70	16.90	17.24	2,510.00
Production value of Shrimps	sf 1000	18,594.00	43,308.00	43,308.00	35,867.00	55,569.00	54,641.00	73,916.00	84,180.00	64,413.00	53,609.00	49,553.00	81,781.00
Production value per kg	sf.	5.25	10.55	10.55	13.24	17.56	17.65	19.57	22.69	19.60	19.47	20.54	24.87
LOCAL CONSUMPTION													
Local consumption of sea-shrimps	Ton	24.00	24.00	27.00	38.00	48.00	36.00	76.00	74.00	81.00	85.00	74.00	234.00
Local consumption value of sea-shrimps	sf 1000	89.00	128.00	158.00	544.00	847.00	628.00	1,468.00	1,430.00	1,215.00	1,137.00	1,194.00	4,277.00
Price of local consumption per kg	sf	3.71	5.25	5.85	14.32	17.65	17.44	19.32	19.32	15.00	14.96	16.14	18.28

Source: Ministry of Agriculture, Livestock & Fisheries
Agricultural Statistics Division



TABLE III.1.6

III.1.6

ACREAGE AND PRODUCTION OF PADI

DESCRIPTION	UNIT	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
PADI ACREAGE:													
Standing Acreage	ha	28,614	29,333	29,940	32,470	32,900	35,400	39,854	42,600	43,000	43,745	49,400	49,400
Planted Acreage	-	47,500	48,400	49,700	55,200	58,855	64,956	70,823	72,571	73,343	74,770	74,890	75,106
Small Farming	-	19,946	20,158	19,561	21,340	20,574	22,395	24,555	24,885	22,978	21,586	25,348	24,049
Large Farming	-	27,554	28,242	30,139	33,860	38,281	42,561	46,268	47,686	50,365	53,184	49,542	51,087
Nicheerie	-	45,125	45,980	47,215	52,440	55,619	58,856	63,700	63,178	62,264	61,607	61,868	60,733
Other Districts	-	2,375	2,420	2,485	2,760	3,236	6,100	7,123	9,393	11,079	13,163	13,022	14,403
PADI PRODUCTION:													
Small Farming	ton	65,822	70,650	87,544	91,214	83,812	96,630	105,155	103,363	87,357	98,507	112,150	110,890
Large Farming	-	109,023	101,850	115,322	132,732	151,960	160,999	175,572	197,767	180,601	203,468	187,035	189,064
Total Production	-	174,845	172,500	202,866	223,946	235,772	257,629	280,727	301,130	267,958	301,975	299,185	299,954
O.F. Nicheerie	-	165,158	164,756	194,914	214,700	224,799	231,443	252,261	261,778	227,407	247,735	245,920	245,050
Other Districts	-	9,687	7,744	7,952	9,246	10,973	26,186	28,466	39,352	40,551	54,240	53,265	54,904
AVERAGE YIELD PER PLANTED ACREAGE:													
Total	kg	3,680	3,564	4,082	4,057	4,006	3,966	3,964	4,149	3,653	4,039	3,995	3,992
Small Farming	-	3,300	3,505	4,475	4,274	4,074	4,315	4,282	4,154	3,802	4,563	4,424	4,611
Large Farming	-	3,960	3,606	3,826	3,920	3,970	3,783	3,795	4,147	3,586	3,826	3,775	3,700
Nicheerie	-	3,660	3,583	4,128	4,094	4,042	3,932	3,960	4,143	3,652	4,021	3,975	4,035
Other Districts	-	4,080	3,200	3,200	3,350	3,390	4,293	3,996	4,190	3,660	4,121	4,090	3,812

Source: Ministry of Agriculture, Livestock and Fisheries
Agricultural Statistics Division



TABLE III.1.7

ACREAGE AND PRODUCTION OF BANANA
IN SURINAME 1975-1986

III.1.7

DESCRIPTION	UNIT	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Planted Acreage	ha	1,794.0	1,742.0	1,739.0	1,694.0	1,683.0	1,625.0	1,939.0	1,672.0	1,629.0	1,709.0	1,641.0	1,625.0
Production Acreage	"	1,653.0	1,707.0	1,691.0	1,533.0	1,494.0	1,475.0	1,567.0	1,500.0	1,425.0	1,546.0	1,480.0	1,502.0
Production volume	ton	44,192.0	42,906.0	31,508.0	33,063.0	31,214.0	39,226.0	44,703.0	42,399.0	36,598.0	41,063.0	43,139.0	43,744.0
Prod./ha Harvest Acreage	"	26.7	25.1	18.6	21.5	20.9	26.6	28.5	27.7	25.7	26.6	29.1	29.1
Export Volume	ton	38,265.0	36,987.0	31,115.0	29,020.0	27,332.0	33,220.0	36,488.0	37,483.0	32,158.0	34,932.0	37,338.0	35,996.0
Export Value Sf.1000	"	6,102.0	7,428.0	5,862.0	6,979.0	7,386.0	10,124.0	12,202.0	13,241.0	13,225.0	15,991.0	18,276.0	19,870.0
Export Value per ton	"	159.0	201.0	215.0	240.0	270.0	305.0	344.0	353.0	411.0	457.0	489.0	552.0
INDICES OF: 1]													
Harvest Volume		100.0	97.0	71.0	75.0	71.0	89.0	101.0	94.0	83.0	93.0	98.0	99.0
Export Volume		100.0	97.0	81.0	76.0	71.0	87.0	95.0	98.0	84.0	91.0	98.0	94.0
Export Value		100.0	122.0	96.0	114.0	121.0	166.0	200.0	217.0	217.0	262.0	300.0	326.0
Export Value per ton		100.0	126.0	135.0	151.0	170.0	192.0	216.0	222.0	258.0	287.0	308.0	347.0
Total no. of Employees		1,017.0	909.0	909.0	1,237.0	1,210.0	1,360.0	1,355.0	1,352.0	1,476.0	1,410.0	1,426.0	1,410.0
O.W. Higher level personnel		36.0	34.0	31.0	23.0	27.0	26.0	26.0	27.0	16.0	18.0	19.0	19.0
TOTAL GROSS WAGES	Sf.1000	2,860.0	3,108.0	3,338.0	4,270.0	4,866.0	5,590.0	7,604.0	8,036.0	10,575.0	11,665.0	12,797.0	n.a

Source: Suriland Head Office



TABLE III.1.8

ACREAGE, PRODUCTION AND DESTINATION
OF SUGARCANE PRODUCTS 1975-1986

III.1.8

DESCRIPTION	UNIT	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
PLANTED ACREAGE	ha	2,286.0	2,120.0	2,188.0	2,303.0	2,429.0	2,392.0	2,422.0	2,489.0	2,500.0	2,491.0	2,523.0	2,523.0
HARVEST ACREAGE	"	1,612.0	1,950.0	1,885.0	1,742.0	2,042.0	1,782.0	2,161.0	1,954.0	1,959.0	1,936.0	1,918.0	1,712.0
SUGARCANE PRODUCTION	ton	159,543.0	146,685.0	135,325.0	119,760.0	164,060.0	146,399.0	146,327.0	125,391.0	128,823.0	130,625.0	118,225.0	110,967.0
PRODUCTION PER HA	"	99.0	75.0	72.0	69.0	80.0	82.0	68.0	64.0	69.0	68.0	62.0	64.0
ROUGH SUGAR: Production	ton	9,577.0	8,391.0	6,370.0	6,751.0	9,967.0	6,997.0	8,118.0	7,049.0	6,051.0	6,533.0	6,739.0	6,011.0
Export volume	"	300.0	3,150.0	4,335.0	2,532.0	342.0							
Export value	Sf. 1000	204.0	2,142.0	3,551.0	3,038.0	382.0							
Export value/ton	Sf/ton	680.0	680.0	796.0	796.0	1,200.0	1,118.0						
ALCOHOL 50%: Production	1000 ltr	2,422.0	2,067.0	1,371.0	1,697.0	1,695.0	1,250.0	949.0	1,047.0	2,328.0	1,253.0	1,608.0	1,562.0
Export volume	1000 ltr	1,831.0	1,063.0	173.0	1,285.0	410.0	722.0	473.0		170.0	170.0		
Export value	Sf.1000	852.0	404.0	75.0	1,132.0	492.0	463.0	269.0		76.0	76.0		
Export value/ton	Sf/ton	465.0	380.0	434.0	881.0	1,200.0	641.0	567.0		447.0	447.0		
MELASSE PRODUCTION	ton	5,727.0	5,394.0	4,524.0	4,192.0	5,008.0	4,594.0	3,580.0	1,891.0	1,791.0	2,062.0	2,900.0	2,715.0
TOTAL No. OF EMPLOYEES	1430	1,234.0	1,349.0	1,349.0	1,329.0	1,614.0	1,582.0	1,491.0	1,445.0	1,402.0	1,378.0	1,365.0	1,410.0
O.W. High Level Personnel	20	19.0	19.0	18.0	18.0	19.0	17.0	17.0	23.0	18.0	16.0	21.0	16.0

Source: Ministry of Agriculture, Livestock & Fisheries
Agricultural Statistics Division

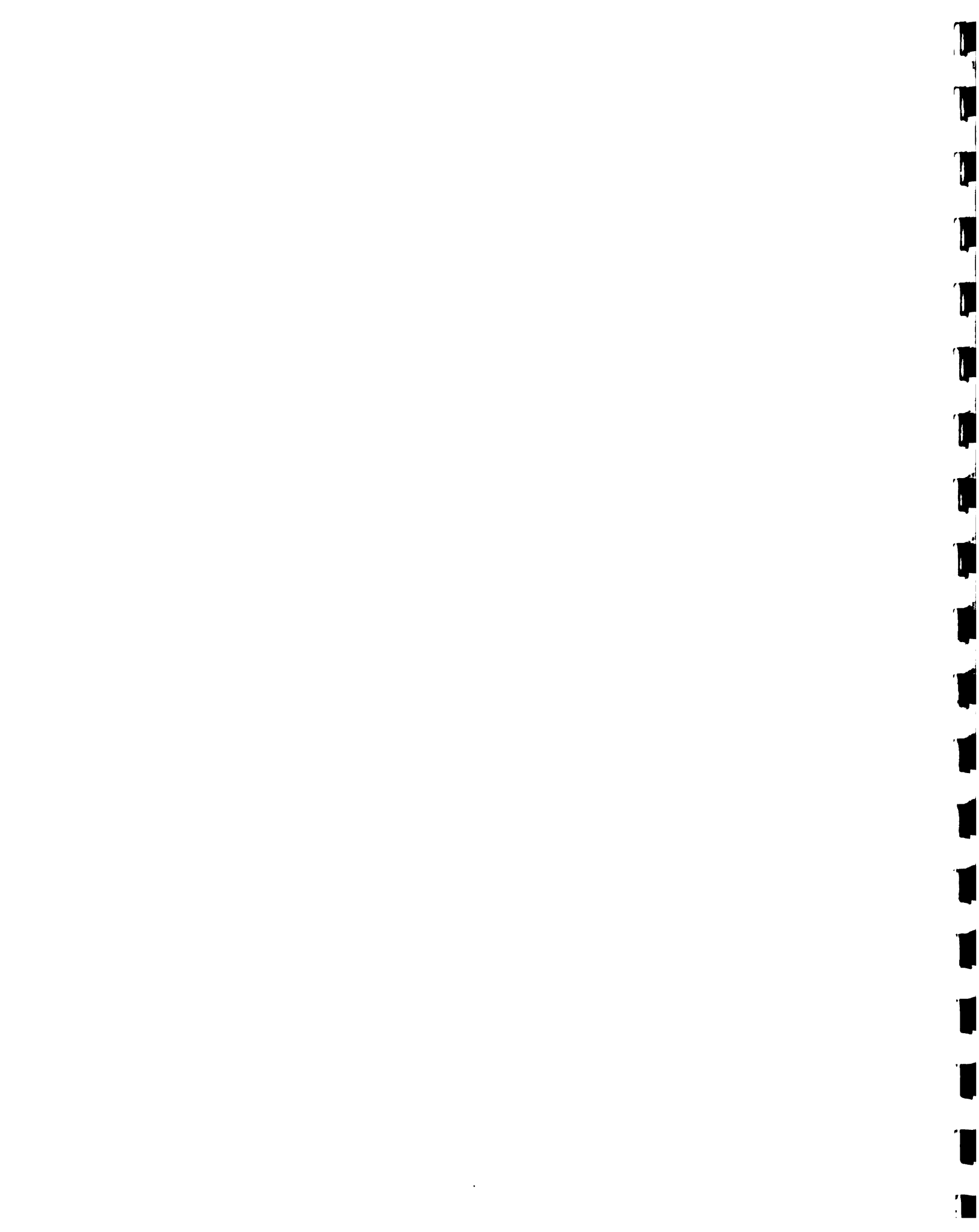


TABLE III.1.9

ACREAGE, PRODUCTION AND DESTINATION
OF PALM-OIL PRODUCTS 1975-1986

III.1.9

DESCRIPTION	UNIT	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
ACREAGE:													
Planted Acreage	ha	1,645.0	1,710.0	1,880.0	2,025.0	2,372.0	2,614.0	2,948.0	4,199.0	4,954.0	5,747.0	6,187.0	6,128.0
Production Acreage	"	530.0	1,058.0	1,358.0	1,650.0	1,650.0	1,800.0	1,944.0	2,552.0	2,741.0	3,281.0	3,680.0	4,212.0
PRODUCTION:													
Palm Strings	Ton	3,725.0	6,658.0	10,186.0	14,838.0	24,759.0	21,026.0	24,653.0	28,188.0	31,235.0	33,894.0	36,211.0	39,296.0
Crude Palm-Oil	"	625.0	1,338.0	1,848.0	2,806.0	4,874.0	4,991.0	4,722.0	5,691.0	6,558.0	7,140.0	7,958.0	6,024.0
Palm Kernels	"	58.0	370.0	734.0	734.0	994.0	844.0	880.0	1,133.0	1,180.0	1,530.0	1,987.0	1,609.0
Fatty Acids	"	n.a	n.a	n.a	105.0	120.0	177.0	214.0	317.0	397.0	400.0	376.0	245.0
Stearin	"	n.a	n.a	n.a	654.0	591.0	944.0	1,358.0	1,574.0	2,127.0	1,969.0	2,333.0	88.0
Refined Palm-Oil	"	n.a	n.a	n.a	8.0	138.0	144.0	88.0	5.0	38.0	434.0	786.0	729.0
Olefin (Edible oil)	"	n.a	n.a	n.a	1,613.0	1,691.0	2,376.0	3,009.0	3,152.0	4,003.0	4,191.0	3,639.0	3,472.0
Palm strings per HA	kg	6,000.0	9,488.0	8,488.0	9,000.0	15,000.0	11,700.0	12,700.0	11,000.0	11,400.0	10,300.0	10,440.0	7,193.0
EXPORT:													
Crude Palm-Oil	Ton	625.0	1,383.0	1,132.0	810.0	2,170.0	417.0	417.0	535.0	535.0	536.0	663.0	663.0
Palm Kernels	"	n.a	49.0	356.0	698.0	1,081.0	726.0	935.0	*	*	*	*	*
Stearin	"	n.a	n.a	125.0	520.0	607.0	811.0	1,214.0	1,579.0	1,824.0	1,883.0	2,558.0	2,558.0
Fatty Acids	"	n.a	n.a	n.a	100.0	99.0	116.0	237.0	314.0	357.0	359.0	313.0	313.0
EXPORT VALUE:													
Crude Palm-Oil	Sf.1000	438.0	889.0	1,056.0	816.0	2,294.0	424.0	424.0	238.0	238.0	361.0	419.0	119.0
Palm Kernels	"	n.a	n.a	106.0	215.0	513.0	184.0	181.0	722.0	700.0	569.0	844.0	844.0
Stearin	"	n.a	n.a	67.0	359.0	432.0	484.0	638.0	113.0	97.0	82.0	72.0	72.0
Fatty Acids	"	n.a	n.a	n.a	41.0	52.0	59.0	86.0	113.0	97.0	82.0	72.0	72.0
TOTAL EXPORT VALUE	"			1,033.0	1,388.0	3,068.0	727.0	549.0	835.0	1,033.0	1,012.0	916.0	119.0
PERSONNEL:													
No. of Employees				378.0	550.0	516.0	600.0	702.0	780.0	797.0	748.0	730.0	712.0
O.N. High Level Personnel				10.0	13.0	13.0	13.0	15.0	21.0	22.0	20.0	22.0	25.0
TOTAL GROSS WAGES	Sf.1000			2,000.0	3,219.0	4,148.0	4,606.0	6,393.0	8,762.0	8,819.0	9,312.0	9,312.0	9,312.0

* In 1982 the Export of Palm kernels was stopped because of local processing
 ** Seasonal workers excluded

Source: Ministry of Agriculture, Livestock & Fisheries

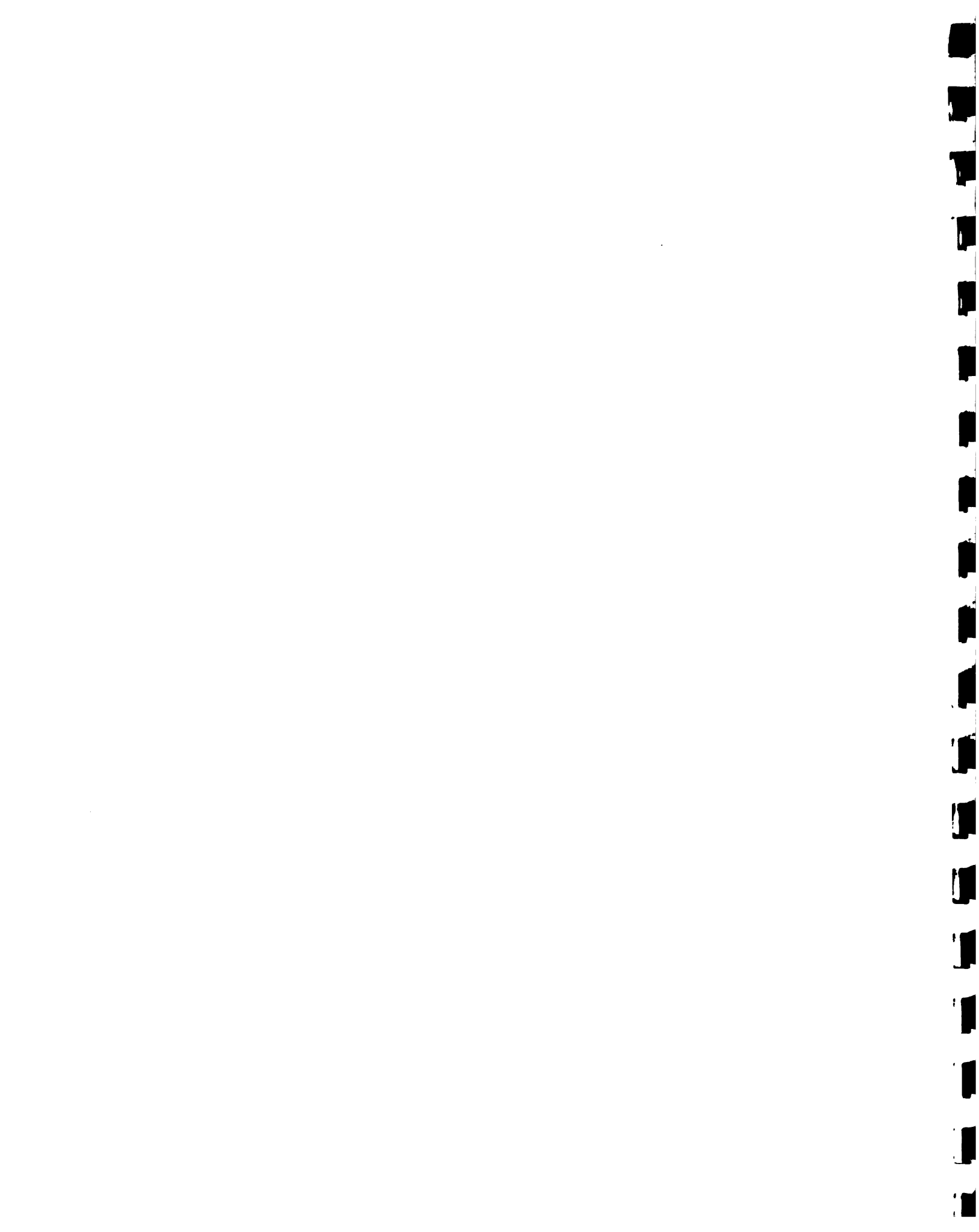


TABLE III.1.10

ACREAGE AND DESTINATION OF CITRUS FRUITS

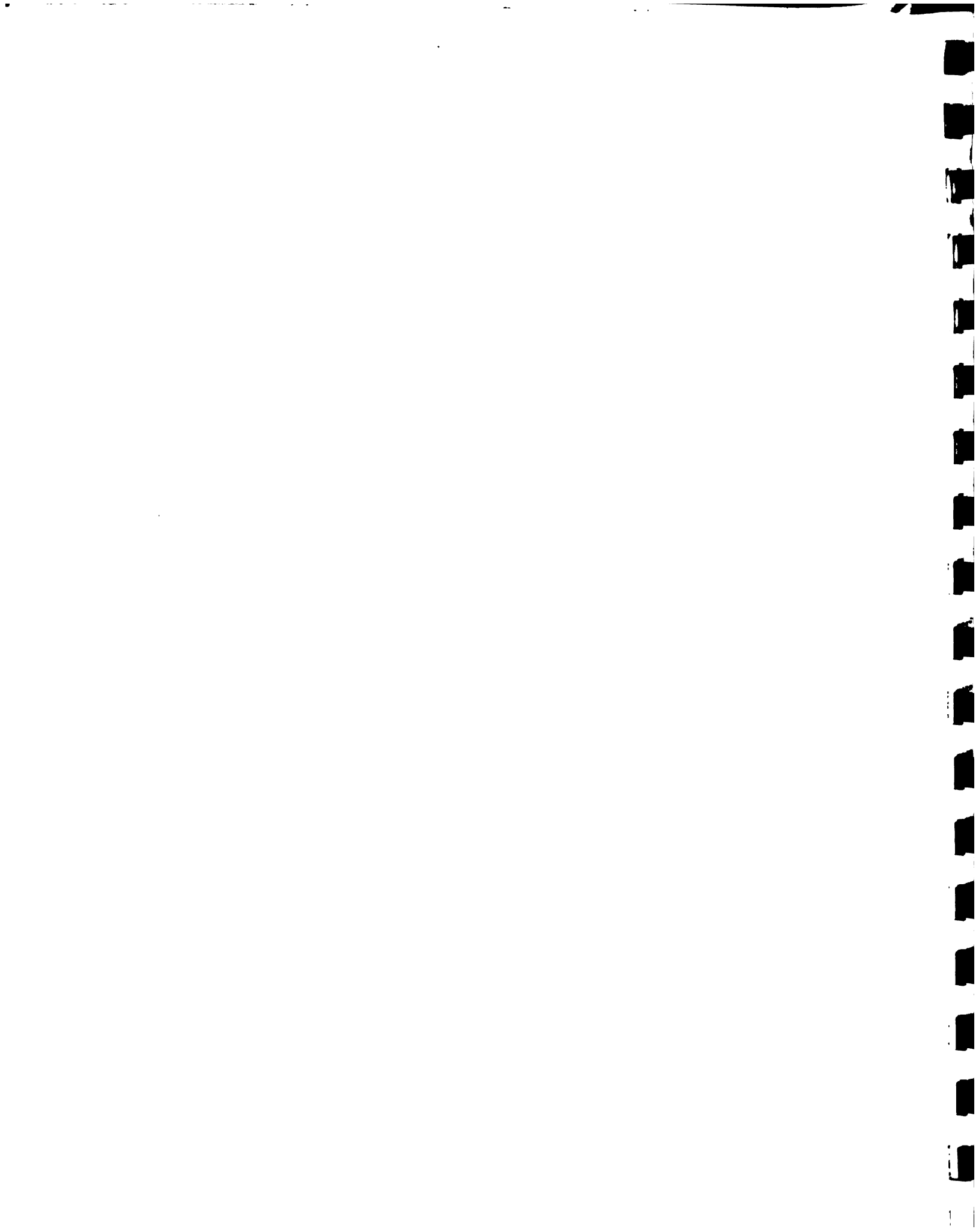
III.1.10

DESCRIPTION	UNIT	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Planted Acreage	Ha	2,023.0	1,980.0	2,000.0	1,890.0	1,899.0	1,934.0	2,154.0	1,774.0	1,755.0	1,981.0	2,151.0	2,165.0
Productive Acreage	Ha	1,220.0	1,190.0	1,200.0	1,250.0	1,300.0	1,537.0	1,600.0	1,400.0	1,400.0	1,600.0	1,670.0	1,700.0
PRODUCTION													
	Orange	11,875.0	11,250.0	12,750.0	5,966.0	7,048.0	8,756.0	9,375.0	7,717.0	8,673.0	8,659.0	9,560.0	9,550.0
	Grape Fruit	3,000.0	2,875.0	3,388.0	2,509.0	2,109.0	1,773.0	1,160.0	1,197.0	1,903.0	1,659.0	1,447.0	1,273.0
	Other Citrus	600.0	525.0	775.0	245.0	464.0	584.0	606.0	455.0	540.0	950.0	1,012.0	801.0
	Total Production	15,475.0	14,650.0	16,913.0	8,720.0	9,621.0	11,113.0	11,441.0	9,369.0	11,116.0	11,268.0	12,019.0	11,624.0
EXPORT													
	Orange	4,149.0	2,402.0	1,022.0	784.0	946.0	777.0	949.0	1,079.0	654.0	520.0	517.0	475.0
	Grape Fruit	592.0	743.0	217.0	125.0	116.0	138.0	101.0	181.0	78.0	94.0	128.0	182.0
	Other Citrus	20.0	1,038.0	553.0	115.0	175.0	195.0	205.0	190.0	170.0	120.0	118.0	98.0
	Total Export	4,761.0	4,183.0	1,792.0	1,024.0	1,237.0	1,110.0	1,255.0	1,450.0	902.0	734.0	763.0	755.0
	Export Value \$f. 1000	1,008.0	836.0	358.0	449.0	658.0	621.0	829.0	936.0	586.0	400.0	412.0	573.0
	Av. Export Value/per ton	Sf. 211.0	200.0	200.0	440.0	530.0	559.0	660.0	650.0	650.0	545.0	540.0	759.0

* Preliminary figures

1) Export to French Guyana

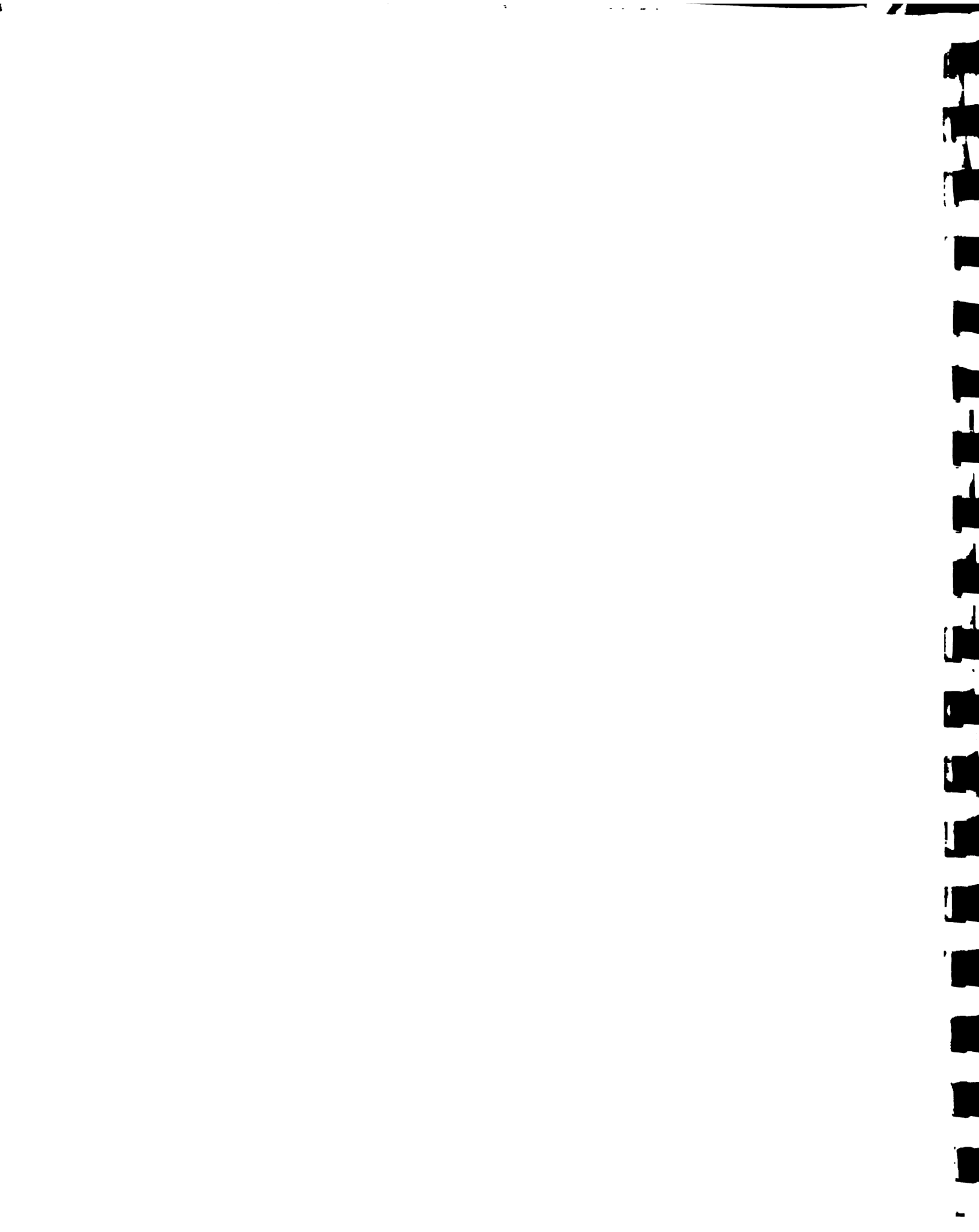
Source: Ministry of Agriculture, Livestock and Fisheries
Agricultural Statistic Division



SURINAME TOTAL LIVESTOCK POPULATION 1986

III.1.11

LIVESTOCK CLASSES	TOTAL NUMBER	SURINAME DISTRICTS									
		NICKERIE	CORONIE	SARAHACCA	SURINAME	PARA	BROKOPONDO	COMHEIJNE	MAROWIJNE		
Total Cattle	67,423	10,210	802	5,076	40,624	4,274	1,630	4,527	280		
Milking Cows	28,310	4,304	306	1,948	17,092	1,882	1,000	1,677	101		
Heifers 0 - 2.5 years old	16,371	2,508	225	1,159	9,766	1,077	300	1,229	107		
Young Bulls 0 - 2.5 years old	13,860	2,080	178	990	8,348	943	245	1,017	59		
Bull over 2.5 years old	8,314	1,305	93	614	5,336	360	55	538	13		
Oves	40	13			18	9					
Buffalos	528			365	64	3	30	66			
Total Poultry	733,480	11,532	24,525	64,825	362,227	190,551		64,320	7,500		
Chickens	633,854	6,527	13,778	64,825	291,047	196,172		54,005	7,500		
Other	99,626	5,005	10,747		71,180	2,379		10,315			
Total Swine	19,193	732	2,331	2,722	11,103	1,825		304	176		
Sows	3,860	275	617	498	1,998	355		33	84		
Boars	1,384	131	645	91	357	68		12	80		
Piglets	13,949	326	1,069	2,133	8,748	1,402		259	12		
Others											
Horses	341	17		19*	170	70	50	7			
Donkey and Mules	89				162	26		1			
G.	5,768	984	307	600*	3,260	49		516	50		
Sheep	4,024	1,550	38	150*	1,773	348		145	20		



EXTRACT FROM "FEASIBILITY REPORT IN ANIMAL HEALTH INFORMATION AND DATA MONITORING SYSTEMS FOR CARICOM MEMBER STATES AND SURINAME"

F. Suriname.

1. Findings:

Suriname recently (1986) completed an epidemiological survey of disease in cattle and swine. Specimens were collected for serology, fecal examination, and necropsy. Approximately 2% of the cattle and 17% of the swine were randomly sampled. Results of this survey indicated that a variety of diseases were present, but no single disease was noticeably inhibiting production. In other words, the problems were similar to those in the United States and elsewhere, but of a higher magnitude. A Brucellosis eradication program (test and slaughter) was underway. However, there were no significant viral, bacterial, or protozoal diseases, and no exotic animal diseases were noted. Nutrition and parasites were recognized problems.

To identify government priorities related to improving animal production, the first step was development of an Animal Health Data Monitoring System specifically for Suriname's dairy industry, which included disease and economic parameters. The swine industry was to be the second phase. Briefly, Monitor B in the Appendix was presented to the Dairy Union in Suriname and ten farms were chosen for the initial phase. The Veterinary Division coordinated this effort, with the farmers receiving an educational program to explain the working of the system. Animal health assistants collected records monthly for collation and input onto the computer in the Veterinary Division. Report analyses were returned to the farmers. Good cooperation between the veterinarians, animal health



other Caribbean countries as well, and is an issue that needs to be resolved regionally. An air supply courier service through CARICOM furnishing needs from Europe and the United States might be one way to overcome this dilemma.

At present, the poultry industry in Suriname consists of basically three commercial operations and much subsistence farming. Goals for this industry are to meet the needs of the consumer, thus eliminating extremely costly importing. However, for this to occur, present disease and management states need to be evaluated. The government maintains no poultry slaughterhouses, and presently, the veterinarians interact with producers only on acute problems. Flock records are not used, thus, poultry monitors could provide the needed insight for the necessary policy decisions.

2. Recommendations:

- a. Resume, analyze, and expand the initial pilot study for animal health data monitoring.

The data from the animal health data monitoring program in the dairy industry that was initiated and underway for four months, was showing disease, management, and economic trends that could provide the desired production information. Hopefully, the farmers have been able to maintain data collection during the turmoil, so that, at its conclusion, this data can be collated and analyzed. This situation points to the importance of keeping this system primarily under the operation of the farmers. In the first



four months of this program, some logistical problems were encountered, but these can easily be overcome or corrected. Recommendations are to determine where the present program is, to reinstate it, and expand its scope (Monitor B, H).

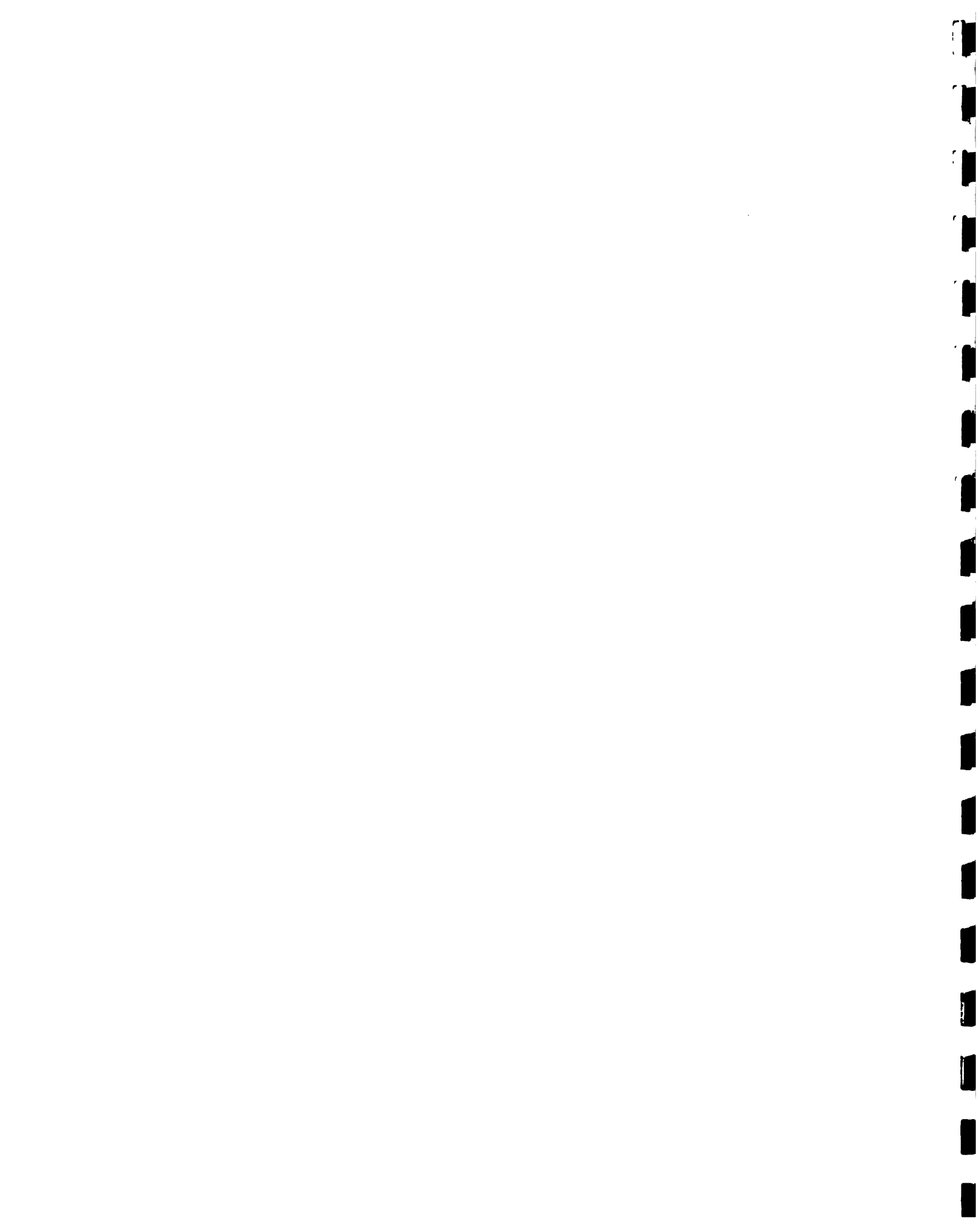
In addition, the mastitis control program that resulted from early animal health data monitoring information needs to be evaluated. Again, hopefully the farmers have been able to obtain supplies and maintain this program. Results would not only be meaningful to Suriname, but also germane to other Caribbean countries.

b. Develop a monitor specific for the poultry industry.

Establishing a poultry monitor similar to that in Appendix G is a more immediate need than conducting a survey similar to that undertaken for cattle and swine. The primary laboratory backup required would be for the testing of various poultry viral diseases, which the present laboratory is not equipped to perform. However, fortunately, some new ELISA-type tests are available for poultry that can meet this need. Parasite and microbiology testing can more than adequately be handled by present facilities. A monitor with disease, management, nutritional, and economic variables for analysis should provide the insight desired by the Minister of Agriculture to properly upgrade this industry.

c. Develop a nutritional support system.

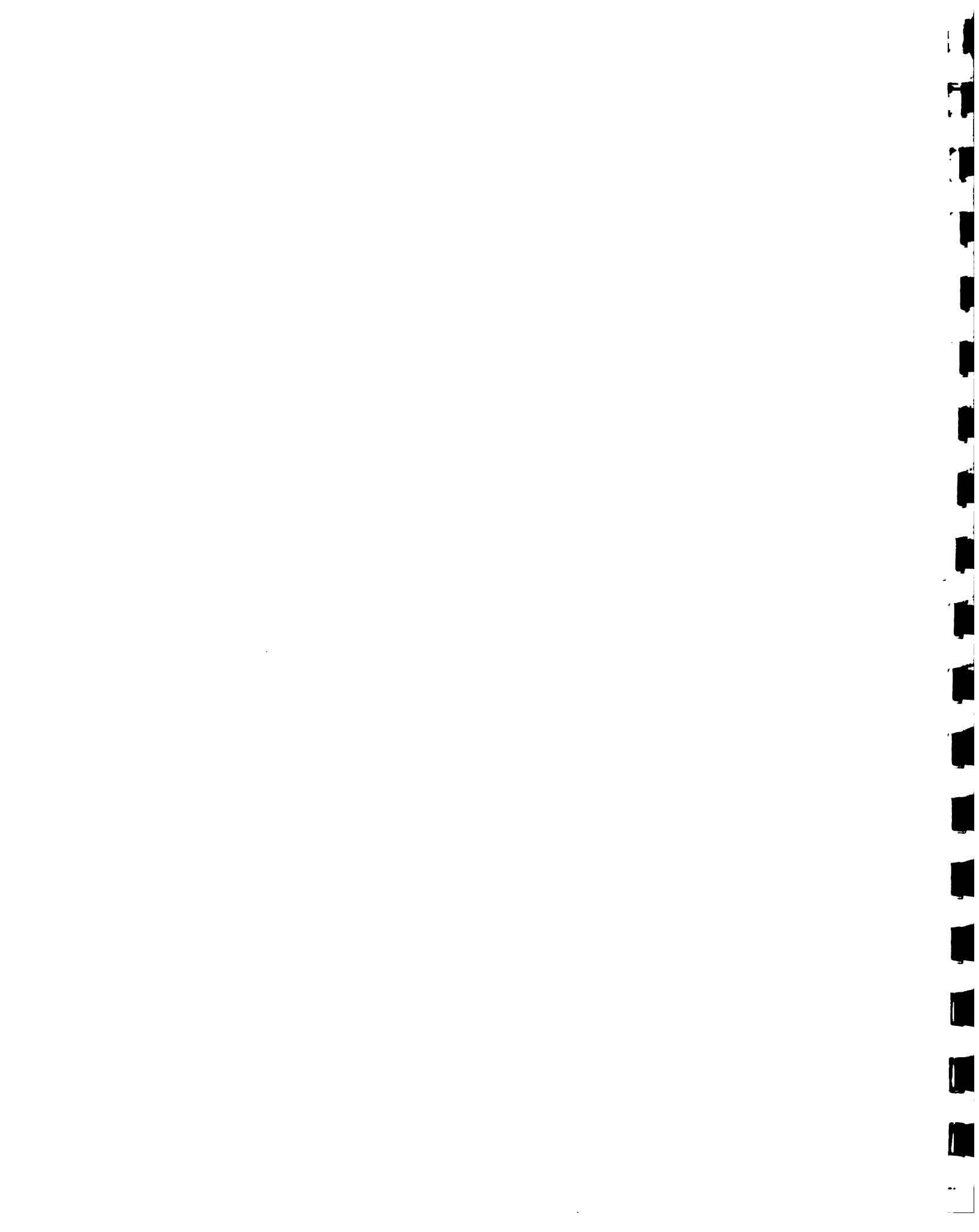
As a part of the ongoing evaluation of the animal health



production problem, the nutritional management system needs to be investigated. Segments of Monitor F and other commercially available monitors (Monitor I) need to be considered by livestock producers in Suriname. Nutrition and disease are closely interrelated when it comes to production, thus, they both need to be simultaneously evaluated. Information presently available on forage analysis must be utilized in this understanding, but there is a continuing need to know what is actually in the forage and feed that the animals are receiving. This will require analysis of the actual feed presented to the animals and a monitor that evaluates nutritional input and outcome variables. This is necessitated by the practice of diluting commercial feeds.

d. Development of a "Center of Excellence" for analysis of mycotoxins in feed, milk, and urine.

Recent evidence indicates that mycotoxins may be playing a major role in exacerbating infectious diseases in both man and animals in the Caribbean countries. Recent work also indicates that mycotoxins independently can affect production parameters. Low levels, not those considered toxic (e.g., less than 70 PPB) can result in delayed return of estrus in swine and decreased milk production in dairy cows. Due to the environmental conditions in the Caribbean countries, evaluating mycotoxins association with disease and production parameters is needed. Suriname could develop an expertise to address their own needs, and also complement the needs of other Caribbean countries. At pre-



sent, the government screens peanuts for mycotoxins and, thus, have much of the equipment and personnel for this testing. With some additional liquid chromatography columns and reagents, a mycotoxin investigation laboratory could be established. With some initial extracting of samples locally, samples could then be sent to Suriname without jeopardizing the Suriname livestock industry with the potential introduction of diseases not present in their country. As low level mycotoxin ingestion becomes more clearly a limiting production factor, the availability of this testing will be a necessity. The Caribbean environment dictates an urgent need for this analysis.

3. The following people contributed greatly to this feasibility study and our wholehearted thanks is extended to them.

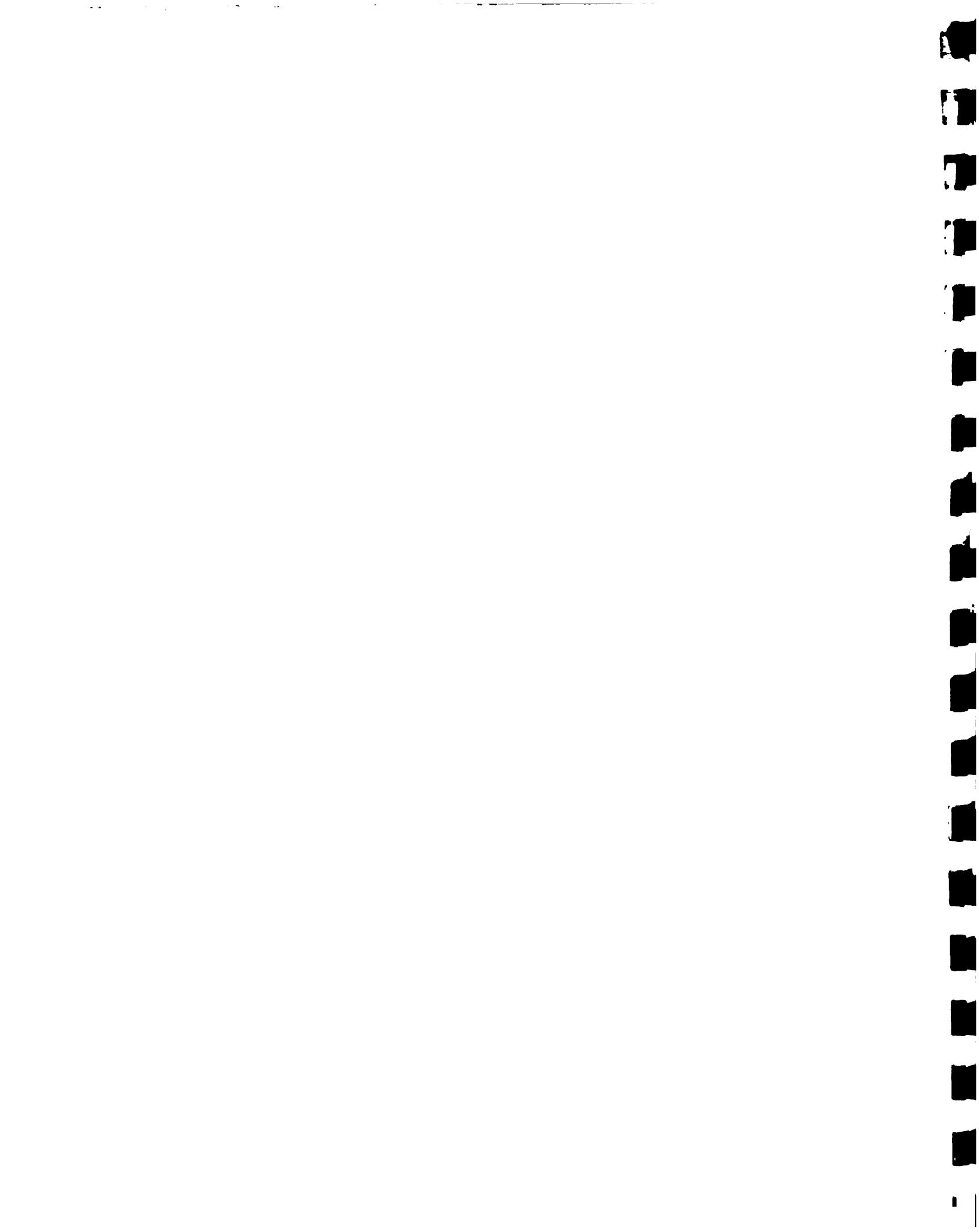
Dr. Liew-a-Joe - Chief Veterinary Medical Officer

Dr. Byron - Veterinarian

Dr. Tjang-a-Fa - Veterinarian

Mr. Drielsma - Farm Manager

Mr. Soekhall - Farm Manager



CLASSIFICATION OF AGRICULTURAL LAND USE ACCORDING TO FARM SIZE AND DEGREE OF UTILIZATION

III.3.2

Category of Farm Size (Ha)	Cultivable Land			Unutilized Land Located Within the Agricultural Belt			TOTAL UN- UTILIZED LAND AREA							
	Crop Production	Grass Land	Total	Swampy Land	Secondary Bush	Area Used for Infrastructure								
	No. of Farms	No. of Farms	No. of Farms	No. of Farms	No. of Farms	No. of Farms								
Less than 1.0	6,138.0	1,173.0	7,311.0	2,023.9	390.0	70.3	185.0	34.7	5,913.0	164.2	269.2	2,293.1		
1 - 2	5,261.0	4,693.0	1,718.0	1,401.2	6,979.0	6,094.2	790.0	369.8	407.0	236.5	4,067.0	263.2	869.5	6,963.7
2 - 5	5,426.0	8,568.8	2,674.0	4,993.4	8,100.0	13,472.2	1,624.0	1,559.8	1,251.0	1,754.9	5,125.0	537.7	3,852.4	17,324.6
5 - 10	2,123.0	8,512.2	776.0	2,762.1	2,899.0	11,274.3	562.0	1,195.6	672.0	2,133.0	1,924.0	506.9	3,835.5	15,109.8
10 - 20	836.0	6,315.1	289.0	1,751.2	1,125.0	8,066.3	315.0	1,350.7	392.0	2,462.2	729.0	449.3	4,282.2	12,346.5
20 - 100	414.0	8,181.3	198.0	3,092.0	612.0	10,273.3	168.0	1,997.3	210.0	3,252.0	380.0	465.3	5,714.6	15,987.9
100 - 500	85.0	9,686.8	35.0	1,919.3	120.0	11,606.1	44.0	2,619.5	45.0	4,710.8	79.0	677.0	8,007.3	19,613.4
500 - 1000	27.0	12,901.2	7.0	874.0	34.0	13,775.2	5.0	231.0	11.0	5,062.1	26.0	1,004.8	6,297.9	20,073.1
More than 1000	18.0	25,689.1	6.0	4,021.7	24.0	29,710.8	7.0	6,869.9	9.0	14,523.3	17.0	3,305.7	24,718.9	54,429.7
Total Farms/Area	20,328.0	85,303.5	6,876.0	20,992.8	27,204.0	186,296.3	3,905.0	16,283.9	3,182.0	34,189.5	18,260.0	7,374.1	57,947.5	164,143.8
Percentage of Total Area	(522)	(132)	(652)	(212)	(42)	(352)	(42)	(352)	(42)	(352)	(42)	(352)	(352)	(1002)



LIVESTOCK POPULATION AND PRODUCTION OF LIVESTOCK PRODUCTS

III.3.3

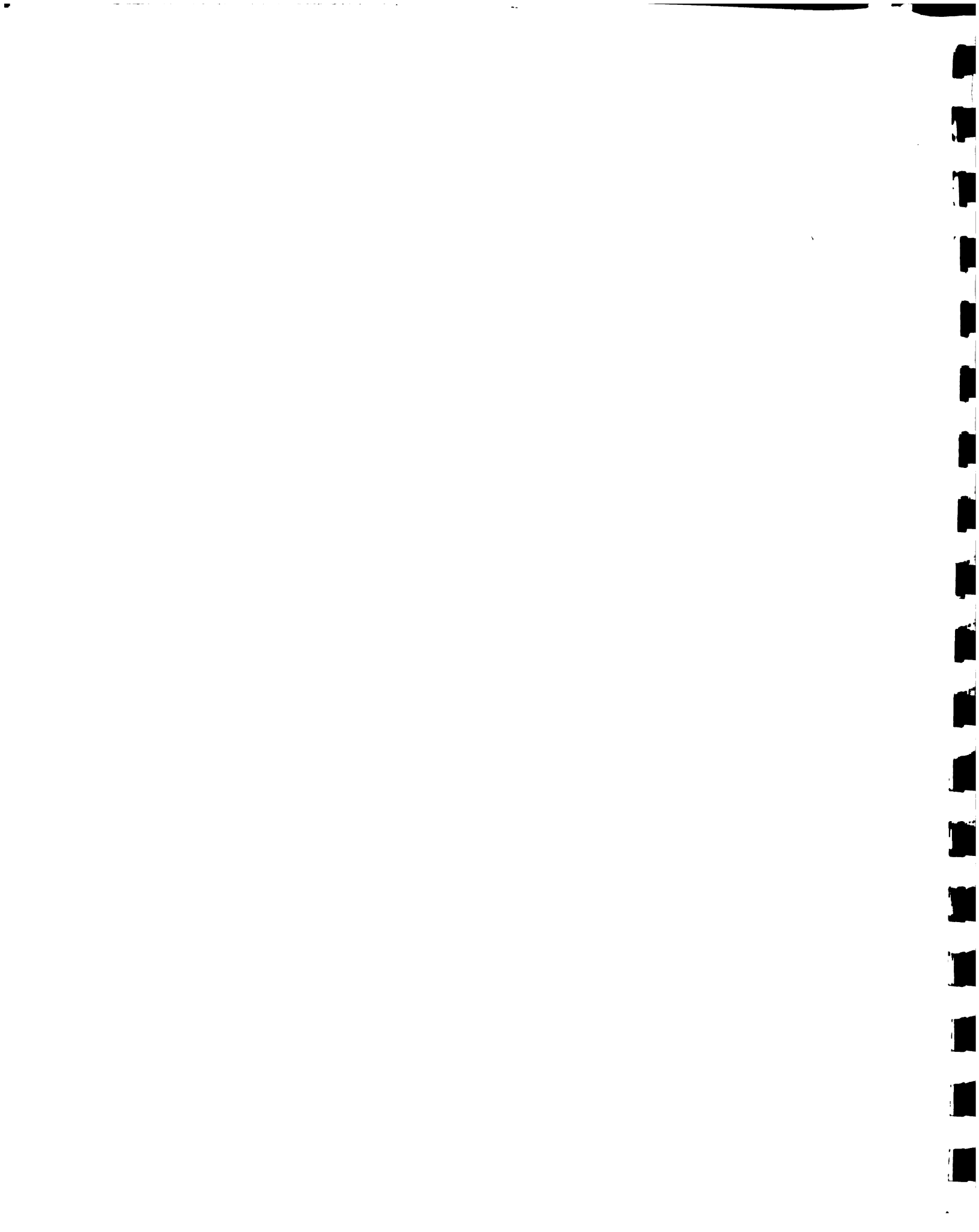
DESCRIPTION	UNIT	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
PASTURE:													
Fenced	ha	6,150	6,331	6,490	6,792	12,201	13,210	15,666	13,084	15,463	16,630	17,000	18,474
Not fenced	ha	4,242	4,788	4,790	2,656	1,749	1,763	5,227	2,386	2,472	2,820	3,000	3,654
TOTAL PASTURE	ha	10,392	11,119	11,280	11,442	13,950	14,973	20,893	15,470	17,935	19,450	20,000	22,128
LIVESTOCK TOLUHE:													
Total Cattle	No.	26,200	25,650	24,000	34,230	41,904	46,213	51,230	53,362	55,701	58,092	60,430	66,895
O.H. Cows	-	14,000	13,500	13,500	15,900	19,036	21,282	21,168	22,919	25,003	23,759	24,664	28,310
Total Pigs	-	18,994	17,619	18,259	18,000	20,179	20,000	17,723	18,593	21,395	21,840	20,972	19,193
Other large livestock	-	400	425	425	265	255	357	410	388	519	766	629	958
Total Goat & Sheep	-	4,400	4,500	4,200	8,888	8,294	9,360	13,099	6,100	6,780	8,875	8,170	9,792
Total Chicken & other Poultry	1000	4,087	4,312	4,400	4,500	4,500	4,500	4,600	4,700	4,700	4,800	5,600	5,000
PRODUCTION:													
Milk 1000 ltr	-	7,560	8,100	7,630	7,790	6,892	7,106	7,200	8,300	8,700	9,524	10,220	12,000
O.H. Milkplant	-	3,040	2,450	2,700	2,937	2,226	2,790	4,400	4,870	5,465	6,172	6,300	6,068
EGGS 1000	-	60,000	64,000	62,000	45,000	52,000	52,000	53,000	53,000	53,000	50,000	61,776	44,400
SLAUGHTERING:													
Cattle	No.	7,654	7,375	6,906	7,929	8,002	8,069	8,121	8,363	8,500	8,728	9,684	7,622
Pigs	-	12,794	11,219	11,759	12,981	13,710	14,939	14,697	13,732	15,300	18,025	20,607	19,015
Goats & Sheep	-	296	354	415	658	754	1,015	1,262	1,155	1,060	1,075	673	429
Chicken & Other Poultry	1000	3,650	3,800	3,900	4,000	4,100	4,200	4,200	4,300	4,300	4,400	5,200	5,000
SLAUGHTERING WEIGHT:													
Cattle	ton	1,045	980	943	1,194	1,098	1,179	1,298	1,355	1,365	1,436	1,468	1,256
Pigs	-	863	774	811	948	1,069	1,135	1,102	993	1,153	1,300	1,563	1,354
Goats & Sheep	-	n.a.	n.a.	n.a.	7	6	7	9	8	7	8	5	5
Chicken & Other Poultry	-	n.a.	n.a.	n.a.	8,000	8,360	8,400	8,400	8,600	8,600	8,800	10,400	
IMPORT:													
Cattle	No.	46	850	1,259	1,040	111			90				
AV. SLAUGHTERING WEIGHT:													
Cattle	kg	133.1	132.9	135.0	150.6	137.2	146.1	159.8	162.0	169.6	164.5	151.6	164.0
Pigs	-	69.0	69.0	69.0	73.0	78.0	76.0	75.0	72.3	75.4	76.6	75.8	71.2
Goats & Sheep	-	n.a.	n.a.	n.a.	10.6	8.0	6.9	7.1	6.9	6.6	1.4	7.4	9.2



III.3.4

IMPORTED QUANTITIES AND VALUES OF BEEF & DAIRY PRODUCTS

VARIABLES	1980	1981	1982	1983	1984	1985	AVERAGE
IMPORTS (tons)							
Salted beef	941.4	1259.6	1345.2	1367.3	1164.1	1255.3	1222.2
% change		33.8	6.8	1.6	-14.9	7.8	7.0
Milk powder	952	764	734	1115	1099	1522	1031
Other milk	998	993	1263	1304	665	437	943
Butter	138	273	333	241	294	161	240
Cheese & others	719	669	717	689	478	314	597
Total milk prodct.	2806	2699	3046	3348	2536	2433	2811
% Change		-3.8	12.9	9.9	-24.3	-4.1	-1.9
IMPORT VALUE (\$f1000)							
Salted beef	1901	2706	2978	2923	2482	2396	2564
% Change		42.4	10.1	-1.8	-15.1	-3.5	6.4
Milk powder	2317	2257	2139	3265	2797	3293	2678
Other milk	1631	1509	1919	1924	918	568	1412
Butter	579	1240	1553	998	1028	587	997
Cheese & others	3050	2720	2987	2572	1429	1129	2314
Total milk prodct.	7577	7726	8598	8758	6172	5578	7402
% change		2.0	11.3	1.9	-29.5	-9.6	-4.8
IMPORT PRICES (\$f/kg)							
Salted beef	2.02	2.15	2.21	2.14	2.13	1.91	2.09
Milk powder	2.44	2.96	2.91	2.93	2.55	2.16	2.66
Other milk	1.63	1.52	1.52	1.48	1.38	1.30	1.47
Butter	4.20	4.54	4.67	4.15	3.50	3.64	4.11
Cheese & others	4.24	4.07	4.17	3.73	2.99	3.60	3.80
Av.(Value/ Quan)	2.70	2.86	2.82	2.62	2.43	2.29	2.62
% change		6.0	-1.4	-7.3	-7.0	-5.8	-3.1



SOME INPUTS AND PRODUCTION OF CATTLE FOR 1980-86. III.3.5

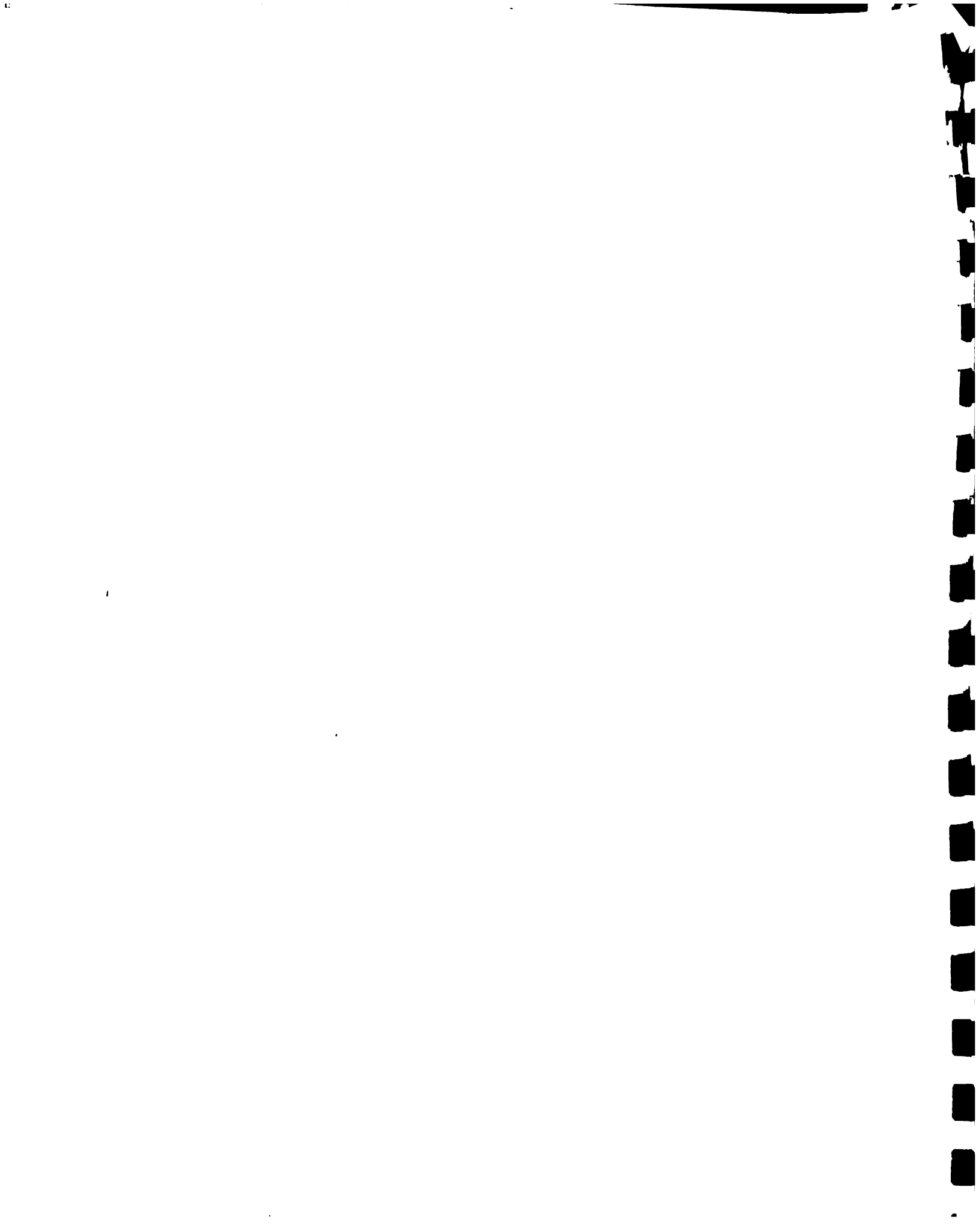
VARIABLES	1980	1981	1982	1983	1984	1985	1986	AVERAGE
INPUTS								
Rain @ Lelydorp(mm)	2130	2050	2220	2930	2460	1950	1880	2231
% Change		-3.8	8.3	32.0	-16.0	-20.7	-3.6	-0.6
Ag.Bank loans for livestock (Sf1000)	438	1774	911	440	1068	1386	1626	1092
% Change		305.0	-48.6	-51.7	142.7	29.8	17.3	65.7
Rice bran (tons)	18255	23055	21620	15770	24640	21515	21870	20961
% change		26.3	-6.2	-27.1	56.2	-12.7	1.7	6.4
Area in pasture (ha)	14970	20890	15470	17940	19450	20000	22130	18693
% Change		39.5	-25.9	16.0	8.4	2.8	10.7	8.6
% of farm land	24.0	27.5	21.4	23.7	24.4	23.2	25.1	24.2
POPULATION								
Cattle	46210	51230	53360	55700	58090	60430	66900	55989
% change		10.9	4.2	4.4	4.3	4.0	10.7	6.4
Milking cows*	n.a	6350	6180	7020	6950	6280	6800	6597
% Cows/ Total	n.a	12.4	11.6	12.6	12.0	10.4	10.2	11.5
Change			-0.8	1.0	-0.6	-1.6	-0.2	-0.4
Water buffalo*	n.a	250	275	342	590	500	530	415
PRODUCTION								
No.slaughtered	8070	8120	8835	8500	8730	9685	7620	8509
Pop. /Killed	5.7	6.3	6.0	6.6	6.7	6.2	8.8	6.6
Change		0.6	-0.3	0.5	0.1	-0.4	2.5	0.5
Beef (tons)	1180	1300	1355	1365	1435	1470	1255	1337
% Change		10.2	4.2	0.7	5.1	2.4	-14.6	1.3
Milk (000 L)	7106	7200	8300	8700	9524	10220	12000	9007
% change		1.3	15.3	4.8	9.5	7.3	17.4	9.3
BEEF CONSUM.(tons)*								
% Prod./ Consum.	n.a	2677	2808	2971	2710	2741	2177	2681
Change		48.6	48.3	45.9	53.0	53.6	57.6	51.2
			-0.3	-2.3	7.0	0.7	4.0	1.8



PRODUCTIVITY, PRICES, AND VALUES OF CATTLE PRODUCTS

III.3.6

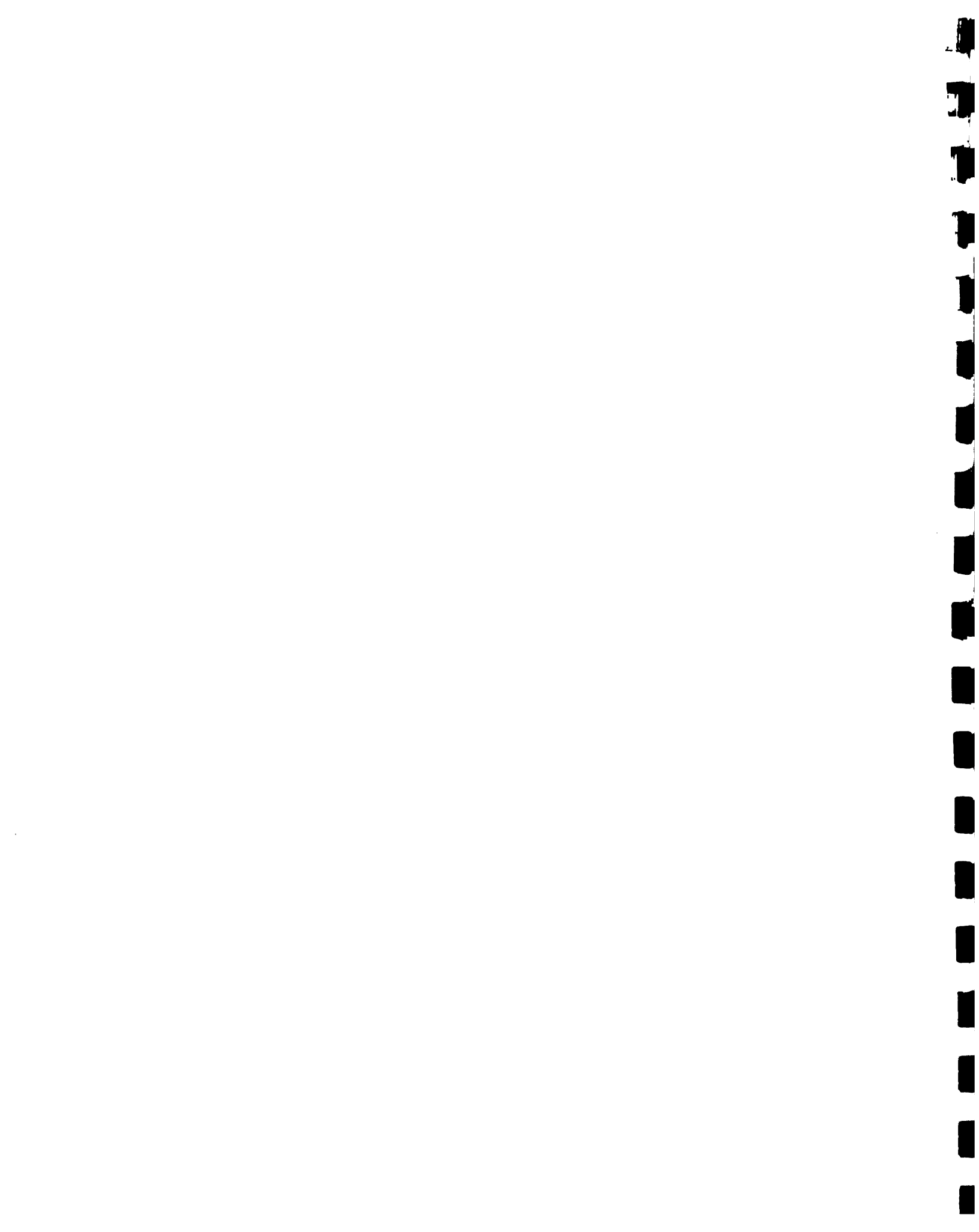
VARIABLES	1980	1981	1982	1983	1984	1985	1986	AVERAGE
PRODUCTIVITY								
Carrying capacity (ha/animal)	0.32	0.41	0.29	0.32	0.33	0.33	0.33	0.33
% change		25.9	-28.9	11.1	4.0	-1.2	-0.1	1.8
Sltr.wt./anim.(kg)	146	160	153	161	164	152	165	157
% change		9.5	-4.2	4.7	2.4	-7.7	8.5	2.2
Milk/ cow (L)	n.a	1134	1343	1239	1370	1627	1765	1413
% change			18.4	-7.7	10.6	18.8	8.4	9.7
FARM PRICES (Official)								
Beef (Sf/kg)	5.50	5.32	5.50	5.50	5.90	6.00	10.00	6.25
% change		-3.3	3.4	0.0	7.3	1.7	66.7	12.6
Milk (Sf/L)	0.45	0.70	0.70	0.70	0.70	0.70	0.80	0.68
% change		55.6	0.0	0.0	0.0	0.0	14.3	11.6
PRODUCER VALUE								
Beef (\$1000)	6490	6916	7453	7508	8470	8820	12550	8315
Milk (\$f1000)	3198	5040	5810	6090	6667	7154	9600	6223
% of total	33.0	42.2	43.8	44.8	44.0	44.8	43.3	42.3
Total value	9688	11956	13263	13598	15136	15974	22150	14538
% change		23.4	10.9	2.5	11.3	5.5	38.7	15.4
Total livestock	45430	47957	51640	52554	59739	70376	88850	59507
% cattle/livestk.	21.3	24.9	25.7	25.9	25.3	22.7	24.9	24.4
Change		3.6	3.0	0.7	-2.1	-10.4	9.8	0.8



PRODUCTION OF MILK PRODUCTS (1981-86)

III.3.7

VARIABLES	1980	1981	1982	1983	1984	1985	1986	AVERAGE
FRESH MILK								
Production (tons)	7106	7200	8300	8700	9524	10220	12000	9007
To Milk Factory	2700	4400	4870	5465	6172	6300	6068	5139
% of production	38.0	61.1	58.7	62.8	64.8	61.6	50.6	56.8
MILK PROCESSING								
Pasteurised (tn)*	8100	8754	9382	10364	11254	12795	14190	10691
% Fresh/ Pastur.	87.7	82.2	88.5	83.9	84.6	79.9	84.6	84.5
Change		-5.5	6.2	-4.5	0.7	-4.8	4.7	-0.5
Butter *		5.58	0.38	0	2.54	21.92	26.91	9.6
Other products		929.4	986.6	1461.0	1535.5	2051.1	1495.1	1409.8
Total (tons)*	n.a	9689	10369	11825	12792	14868	15712	12543
% change			7.0	14.0	8.2	16.2	5.7	10.2
MILK EQUIVALENT								
from powder **	7616	6108	5871.2	8920	8791.2	12172	n.a	8246.4
% powder/ prod.	n.a	63.0	56.6	75.4	68.7	81.9		69.1
Change			-6.4	18.8	-6.7	13.1		4.7
INPUT USE								
% Capacity used	n.a	n.a	52	58	63	68	73	63
No. of workers	n.a	n.a	91	84	86	86	87	87
Productivity(t/wkr			114	141	149	173	181	151
% Change				23.5	5.7	16.2	4.5	12.5
REVENUE & COST (Sf1000)								
Total revenue	n.a	n.a	5293	6374	5721	8224	8416	6806
Production cost	n.a	n.a	8781	9756	10245	11226	14000	10802
Gross Margin			-3488	-3382	-4524	-3002	-5584	-3996
% Change				-3.0	33.8	-33.6	86.0	20.8
SUBSIDY (Sf1000)*								
	1950	3750	2340	3402	3700	4789	5584	3645
% Change		92.3	-37.6	45.4	8.8	29.4	16.6	25.8



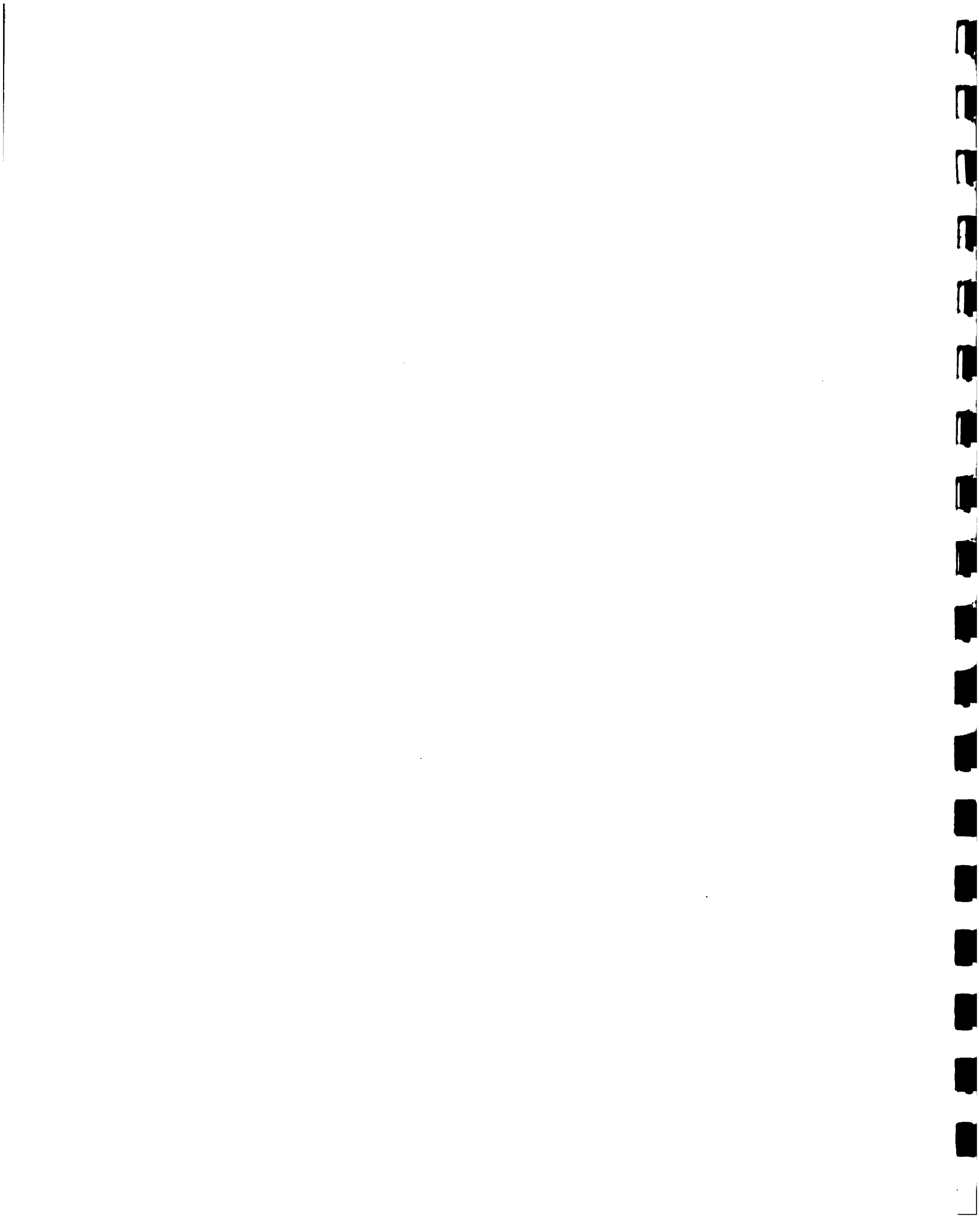
IMPORTED QUANTITIES AND VALUES OF POULTRY INPUTS III.3.8

VARIABLES	1980	1981	1982	1983	1984	1985	AVERAGE
IMPORTS							
Chicks (1000)	1203	1322	750	519	n.a	n.a	948
Hatching eggs	6514	7061	7349	7558	8062	9506	7675
% Change		8.4	4.1	2.8	6.7	17.9	8.0
Feedstuff (tons)*	7849	10773	13010	16525	14404	18294	13476
% Change		37.3	20.8	27.0	-12.8	27.0	19.8
IMPORT VALUE (Sf1000)							
Chicks	795	1201	743	467	5	12	537
Hatching eggs	2398	3196	3470	3428	4604	5112	3701
Feedstuff	5573	6832	7553	9068	7004	8458	7415
Total Value	8766	11229	11766	12963	11613	13582	11653
% Change		28.1	4.8	10.2	-10.4	17.0	9.9
% eggs + chicks	36.4	39.2	35.8	30.0	39.7	37.7	36.5
IMPORT PRICES							
Chicks (Sf each)	0.66	0.91	0.99	0.90	n.a	n.a	0.87
% Change		37.6	9.0	-9.1			12.5
Hatching eggs	0.37	0.45	0.47	0.45	0.57	0.54	0.48
% Change		23.0	4.3	-3.9	25.9	-5.8	8.7
Feedstuff (Sf/kg)	0.71	0.63	0.58	0.55	0.49	0.46	0.57
% Change		-10.7	-8.5	-5.5	-11.4	-4.9	-8.2



PRODUCTION AND VALUE OF POULTRY PRODUCTS FOR 1980-86. III.3.9

VARIABLES	1980	1981	1982	1983	1984	1985	1986	AVERAGE
POPULATION								
No. of birds (1000)	4500	4600	4700	4700	4800	5600	5000	4843
% Change		2.2	2.2	0.0	2.1	16.7	-10.7	2.1
PRODUCTION								
Eggs (1000)*	52800	53000	53000	53000	50000	61800	44400	52571
% Change		0.4	0.0	0.0	-5.7	23.6	-28.2	-1.6
No. killed (1000)	4200	4200	4300	4300	4400	5200	5000	4514
% Change		0.0	2.4	0.0	2.3	18.2	-3.8	3.2
Poultry meat (tn)	8400	8400	8600	8600	8800	10400	9750	8993
% Change		0.0	2.4	0.0	2.3	18.2	-6.3	2.8
Meat/ bird (kg)**	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
FARM PRICES (Official)								
Eggs (Sf. each)	0.13	0.13	0.13	0.13	0.15	0.16	0.25	0.15
% Change		0.0	0.0	0.0	15.4	6.7	56.3	13.1
Meat (Sf/kg)*	n.a	3.00	3.25	3.25	3.50	3.60	5.00	3.60
% Change			8.3	0.0	7.7	2.9	38.9	11.6
RETAIL PRICE								
of meat (Sf/kg)	4.60	4.59	5.00	5.00	5.00	5.09	7.77	5.29
% Retail/ Farm Change	n.a	153.0	153.8	153.8	142.9	141.4	155.4	150.06
			0.8	0.0	-11.0	-1.5	14.0	0.5
PRODUCER VALUE								
Eggs (Sf1000)	n.a	6890	6890	6890	7500	9888	11100	8193
Meat (Sf1000)	n.a	25200	27950	27950	30800	37440	48750	33015
Total Value		32090	34840	34840	38300	47328	59850	41208
% Change			8.6	0.0	9.9	23.6	26.5	13.7
% of Livestock Change		66.9	67.5	66.3	64.1	67.3	67.4	66.6
			0.8	-1.7	-3.3	4.9	0.2	0.2



A. Improvement of the A.I. Service in Suriname.Summary of the initial E.D.F. project

The dairy herd in Suriname consists of some 20 300 milking cows which produce together about 10 million liters of milk. The average farm size in the dairy sector is small, 7.1 A.U. on 8.9 hectares. The largest number of dairy farms are in the District Wanica. In order to meet the national goal of increasing milk production to a level of 75% of the local demand a number of measures have to be taken.

It has long been recognised that improving pastures and general management would have to be accompanied by a sound breeding and upgrading program.

It was proposed for this reason to institute an A.I. centre where frozen semen would be produced. From this centre semen would be distributed to four subcentres, situated in the most important dairy regions. From these subcentres artificial insemination would be carried out. From Y1 - Y5 the number of inseminators would be expanded gradually to a total of 10 in Y5. It is expected that the number of inseminations will expand from 2000 presently to 16 000 in Y5.

In order to realise this project a capital sum of Sfl 545 000 has to be invested and to cover operations in the first years an amount of Sfl 989 000 is requested from the European Development Fund. It was expected that the Artificial Insemination Service Centre will cover its operational costs as of year 5.



B. Variations to Original Project Design

1. Administrative policies and management.

- The A.I. service becomes independent of the state farms.
- The administration of the A.I. will be transferred to Paramaribo.
- For an optimal record keeping system the following data will be recorded:
 - a financial aspects
 - a herd management aspects
 - a conception rate aspects
 - a daily registration of A.I. requests, number of inseminations, number of semen tubes used and kilometers travelled.

2. Inseminators

- The target will be to reach a daily production of 9 to 10 inseminations per inseminator.
- To give good service the inseminators will also be on duty on Sundays and Holidays, i.e. 7 days a week.

3. Starting points

In order to monitor the performance of the inseminators and of their daily activities they all will start work from the central unit in Paramaribo.



4. Calls

To make it possible for the farmer to request A.I. service, without the need for a telephone, a system of checkpoints will be set up. The checkpoints have to be situated on main roads. The checkpoints will keep a register of all requests for A.I. service with a clear and precise description of the exact location of the farms. Collaboration between farmers and inseminators concerning the most desirable place for a checkpoint is a necessity. Inseminators will have to visit these checkpoints on the daily route in order to pick up calls for A.I. service. To be certain that these checkpoints are called upon daily, the inseminator will have to sign and indicate the date and time he visits the checkpoint.

5. Semen

Because of the climatological and managerial circumstances it is necessary to maintain a certain percentage (25%) of zebu blood in the dairy cattle population. The small size and the small scale structure of the dairy cattle population in Suriname makes it unrealistic and uneconomical to set up a program to breed local bulls suitable for the A.I. service. There is within Suriname insufficient selection space available for high quality breeding material. Given the present situation the import of frozen semen is to be preferred to the import of A.I. bulls.



6. The Insemination

In connection with the technical upgrading of the inseminators for insemination with frozen semen a Theoretical course will be given about how to operate with frozen semen.

The service will start with identification of those animals suitable for A.I. through placing of flexible ear tags on the selected animals.

7. Transport

In order to ensure daily mobility of A.I. service, 7 vehicles will be bought, and to guarantee dependable and continuous operation a wide variety of spare parts per vehicle will be stocked.

8. Production of Liquid nitrogen

Due to very high cost of importing liquid nitrogen the service will produce liquid nitrogen locally.



BANK CREDIT TO SECTORS FOR 1976-86. (Sf million)

III.5.1

A). CREDIT FROM COMMERCIAL BANKS

SECTORS	1976	1980	1981	1982	1983	1984	1985	1986*	AVERAGE	
									1980-85	1980-85
Crops & Livestk	19.9	68.3	88.5	99.9	119.9	142.6	157.6	170.7	121.1	121.1
Fishery	2.8	0.6	0.6	0.6	0.9	3.5	5.6	6.4	2.6	2.6
Forestry	0.6	1.6	0.8	0.7	0.6	0.5	0.8	2.0	1.0	1.0
Agri.	23.3	70.5	89.9	101.2	121.4	146.6	164.0	179.1	124.7	124.7
Mining	28.9	24.2	37.0	41.4	35.8	46.4	37.4	38.2	37.2	37.2
Manufac- turing	25.1	49.9	51.1	50.8	52.6	58.3	70.3	74.8	58.3	58.3
Con- struction	8.1	22.7	17.8	20.7	20.2	22.6	20.2	22.0	20.9	20.9
Energy & Water	10.8	24.7	26.2	24.3	23.6	25.1	20.0	14.8	22.7	22.7
SUB-TOTAL	96.2	192.0	222.0	238.4	253.6	299.0	311.9	328.9	263.7	263.7
Trade	73.3	150.3	177.6	197.5	189.7	156.1	154.7	161.5	169.6	169.6
Other										
Services	83.6	135.3	167.9	209.1	248.7	281.5	346.1	405.9	256.4	256.4
TOTAL	253.1	477.6	567.5	645.0	692.0	736.6	812.7	896.3	689.7	689.7

B). CREDIT FROM DEVELOPMENT BANK

Agro- industry	0.484	0.396	0.316	0.225	0.176	0.0	n.a	0.3		
Others	8.5	14.4	21.6	26.8	31.0	38.7	n.a	23.5		
ALL BANKS	486.5	582.3	666.9	719.0	767.8	851.4	n.a	713.4		

Source: Central Bank



PERCENTAGE DISTRIBUTION OF BANK CREDIT BY SECTORS

		III.5.2							AVERAGE	
A). CREDIT FROM COMMERCIAL BANKS		1976	1980	1981	1982	1983	1984	1985	1986	1980-86
Crops & Livestk		7.9	14.3	15.6	15.5	17.3	19.4	19.4	19.0	17.2
Fishery		1.1	0.1	0.1	0.1	0.1	0.5	0.7	0.7	0.3
Forestry		0.2	0.3	0.1	0.1	0.1	0.1	0.1	0.2	0.2
Agri.		9.2	14.8	15.8	15.7	17.5	19.9	20.2	20.0	17.7
Mining		11.4	5.1	6.5	6.4	5.2	6.3	4.6	4.3	5.5
Manufac-turing		9.9	10.4	9.0	7.9	7.6	7.9	8.7	8.3	8.5
Con-struction		3.2	4.8	3.1	3.2	2.9	3.1	2.5	2.5	3.1
Energy & Water		4.3	5.2	4.6	3.8	3.4	3.4	2.5	1.7	3.5
SUB-TOTAL		38.0	40.2	39.1	37.0	36.6	40.6	38.4	36.7	38.4
Trade		29.0	31.5	31.3	30.6	27.4	21.2	19.0	18.0	25.6
Other Services		33.0	28.3	29.6	32.4	35.9	38.2	42.6	45.3	36.1
TOTAL		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
B). CREDIT FROM DEVELOPMENT BANK (PERCENT DISTRIBUTION)										
Agro-industry	n.a	5.4	2.7	1.4	0.8	0.6	0.0	0.0	n.a	1.8

Source: Central Bank



AGRICULTURAL BANK LOANS TO AGRI.SUB-SECTORS FOR 1981-86.

ITEMS	1981	1982	1983	1984	1985	1986	AVERAGE 1981-86
NO. OF LOANS							
Crops	2129	1523	1340	1638	1115	1430	1529
Livestock	197	103	100	146	129	113	131
Fishery	85	57	75	51	34	38	57
Sub-tot.	2411	1683	1515	1835	1278	1581	1717
Other	1117	1342	791	837	1477	1722	1214
Total	3528	3025	2306	2672	2755	3303	2932
AMOUNT OF LOANS (Sf1000)							
Crops	14964	9368	15879	18180	17215	21962	16261
Livestock	1774	911	440	1068	1386	1626	1201
Fishery	425	270	724	270	205	487	397
Sub-tot.	17163	10549	17043	19518	18806	24075	17859
Other	6658	9557	3830	4460	12311	19050	9311
Total	23821	20106	20873	23978	31117	43125	27170
AVERAGE SIZE (Sf1000)							
Crops	7.03	6.15	11.85	11.10	15.44	15.36	11
Livestock	9.01	8.84	4.40	7.32	10.74	14.39	9
Fishery	5.00	4.74	9.65	5.29	6.03	12.82	7
Agri.	7.12	6.27	11.25	10.64	14.72	15.23	11
Other	5.96	7.12	4.84	5.33	8.34	11.06	7
All	6.75	6.65	9.05	8.97	11.29	13.06	9
PERCENT DISTRIBUTION							
Crops	63	47	76	76	55	51	61
Livestock	7	5	2	4	4	4	4
Fishery	2	1	3	1	1	1	2
Sub-tot.	72	52	82	81	60	56	67
Other	28	48	18	19	40	44	33
Total	100	100	100	100	100	100	100
Ag. Bnk/ Com. Bnk							
Ag. loans	19.1	10.4	14.0	13.3	11.5	13.4	14
Ag. Bnk/Com. Bnk	4.2	3.1	3.0	3.3	3.8	4.8	4

Source: Agricultural Bank



ANNEXES
TO CHAPTER IV
THE PROJECT

FARM MODELS
GENERAL

IV.1.1

THE UNIVERSITY OF
MICHIGAN LIBRARY
ANN ARBOR, MICHIGAN

1968 1969
1970 1971

FARM SIZE FREQUENCY BY DISTRICTS

ANNEX TABLE IV.1.1

FARM SIZE INTERVAL 0.5 HA	SURINAME	PARA	SARAMACCA	TOTAL	%	TOTAL NO.OF FARMS* IN THE DISTRICTS
0 + 0.5	4			4	2.2	61
0.6 + -1	9			9	5	137
1.1 - 1.5	12		1	13	7.2	199
1.6 - 2.0	9		4	13	7.2	199
2.1 - 2.5	5			5	2.8	78
2.6 - 2.9	3			3	1.7	47
SUB-TOTAL	42	0	5	47	26	721
INTERVAL 1 HA						
3.0 - 3.9	17	2	3	22	12.2	338
4.0 - 4.9	31	2	3	36	19.9	552
5.0 - 5.9	6	1	1	8	4.4	122
6.0 - 6.9	8	3		11	6.1	169
7.0 - 7.9	4	1	2	7	3.9	108
8.0 - 8.9	4			4	2.2	61
9.0 - 9.9	2	1		3	2.2	61
SUB-TOTAL	72	10	9	91	50.5	1411
INTERVAL 2.0 HA						
10.0 - 11.9	5	2	5	12	6.6	183
12.0 - 13.9	2	1	2	5	2.8	78
14.0 - 15.9	2	1	1	4	2.2	61
16.0 - 17.9		2		2	1.1	30
18.0 - 19.9	1		1	2	1.1	30
20.0 - 21.9	1	3		4	2.2	61
22.0 - 23.9		1	1	2	1.1	30
24.0 - 25.9	1			1	0.6	17
SUB-TOTAL	12	10	10	32	17.7	492
25.0 - 44.9	4	2		6	3.1	85
50 +	2	1	2	5	2.3	64
TOTAL	132	23	26	181	100	2773
%	72.8	12.7	14.5	100		

SOURCE: 1984 SURINAME, PARA, SARAMACCA DISTRICTS DAIRY FARM SURVEY UNPUBLISHED INFORMATION

* ESTIMATED FROM THE PERCENTAGE FOUND IN THE SURVEY SAMPLE

** TOTAL FARMS CONSIDERED IN SURINAME, SARAMACCA AND PARA DISTRICTS



SURVEY FARMS SAMPLED DISTRIBUTION BY DISTRICTS AND SIZE OF FARMS.

IV.1.2

FARM SIZE CATEGORIES HA.	DISTRICTS							% TOTAL
	A	B	C	PARA	SARAMACCA	TOTAL	% TOTAL	
0+ - 2.9	9.0	29.0	4.0	-	5.0	47.0	26.0	
3.0 - 9.9	17.0	30.0	25.0	10.0	9.0	91.0	50.0	
10 - 24.9	6.0	6.0	-	10.0	10.0	32	17.0	
25 - 49.9	3.0	1.0	-	2.0	-	6.0	4.0	
50 + -----	1.0	1.0	-	1.0	2.0	5.0	3.0	
TOTAL	36	67	29	23	26	181	100.0	
% TOTAL	20.0	37.0	16.0	13.0	14.0	100.0		

SOURCE: 1984- FORD/MUNOZ: Suriname, Para, Saramacca Districts Dairy Farms Survey.



CURRENT AND IMPROVED DAIRY PRODUCTION TECHNICAL COEFFICIENTS

T E N Y E A R S P R O J E C T I O N

IV.1.3

COEFFICIENTS	T E N Y E A R S P R O J E C T I O N										
	Y ₀	Y ₁	Y ₂	Y ₃	Y ₄	Y ₅	Y ₆	Y ₇	Y ₈	Y ₉	Y ₁₀
MILK PRODUCTION/COW/DAY (kg)	4.9	4.9	5.5	6.5	7.5	8.0	8.0	8.5	8.5	8.5	8.5
LACTATION LENGTH (days)	207	207	220	230	240	250	260	270	280	290	300
LACTATION YIELD (kg)	1014	1014	1210	1495	1800	2000	2080	2295	2380	2465	2550
CALVING (%)	53.0	53.0	60.0	65.0	65.0	70.0	70.0	75.0	75.0	80.0	80.0
EFFECTIVE MILK PRODUCTION KG/COW/YEAR ADJUSTED BY CALVING (%)	507	507	726	972	1170	1400	1456	1721	1785	1972	2040
MORTALITY (%) CALVES TO 1 YEAR	21	21	15	10	10	5	5	3	3	3	3
MORTALITY (%) ADULTS YEAR+	5	5	3	2	2	1	1	1	1	1	1
LOCKING RATE A.U./HA.	1.5	1.5	2.0	2.0	2.5	2.5	3.0	3.0	3.0	3.5	3.5
NUMBER OF MILKING COWS	5	5	5	10	10	15	15	20	20	20	20

SOURCE: YEAR 0 (Y₀) SURINAME, PARA AND SARAMACCA DISTRICTS DAIRY FARM SURVEY - IICA 1984

Y₁ - Y₁₀ IMPROVEMENT MADE BY THE PROJECT 10 YEARS PROJECTION



ANNEXES
TO CHAPTER IV
THE PROJECT

FARM MODEL A: 1.5 ha
IV.1.2

1994
1995
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DAIRY HERD COMPOSITION FOR FARMS MODEL 'A' OF 1.5 HA SIZE
 IN SURINAME, PARA AND SARAMACCA DISTRICTS*

IV.1.2(i)

ANIMAL CATEGORIES	SURINAME			PARA			SARAMACCA			GRAND TOTAL		
	TOTAL AVERAGE	A.U	TOTAL AVERAGE	A.U	TOTAL AVERAGE	A.U	TOTAL AVERAGE	A.U	TOTAL AVERAGE	A.U	TOTAL AVERAGE	A.U
Number of farms	21.00				5.00			26.00				
Bulls	14.00	0.70	21.00		6.00	1.20	9.00	20.00	0.80	30.00		
Cows on Milk	38.00	1.80	38.00		4.00	0.80	4.00	42.00	1.60	42.00		
Dry cows	38.00	1.80	38.00		12.00	2.40	12.00	50.00	1.90	50.00		
Total Cows												3.50
Heifers												
2-3 years old	7.00	0.30	5.25		2.00	0.40	1.50	9.00	0.30	6.75		
1-2 years old	7.00	0.30	3.50		3.00	0.60	1.50	10.00	0.40	5.00		
Calves 0-9 mos.	42.00	2.00	10.50		4.00	0.80	1.00	46.00	1.80	11.50		
TOTAL	146.00	6.90	116.25		31.00	6.20	29.00	177.00	6.80	145.25		
ANIMAL UNITS**												5.6

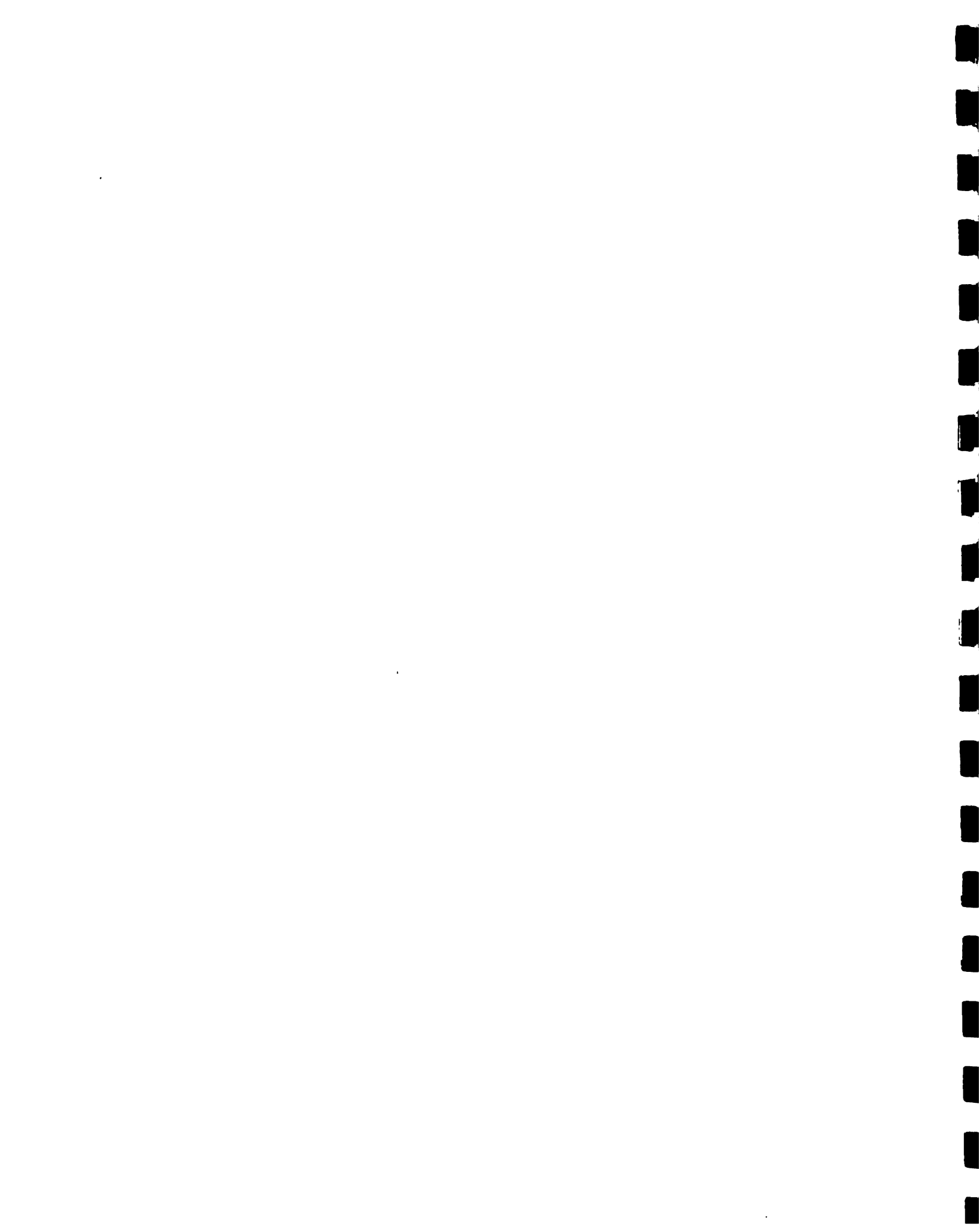
* Source: 1984 FORD/MUNOZ. Suriname, Para and Saramacca Districts Dairy Farms Survey



TECHNICAL COEFFICIENTS-USED IN THE FARM MODELS
 FARM MODEL A. 1.5 HA FARM SIZE ZERO GRAZING SYSTEM IV.1.2(ii)

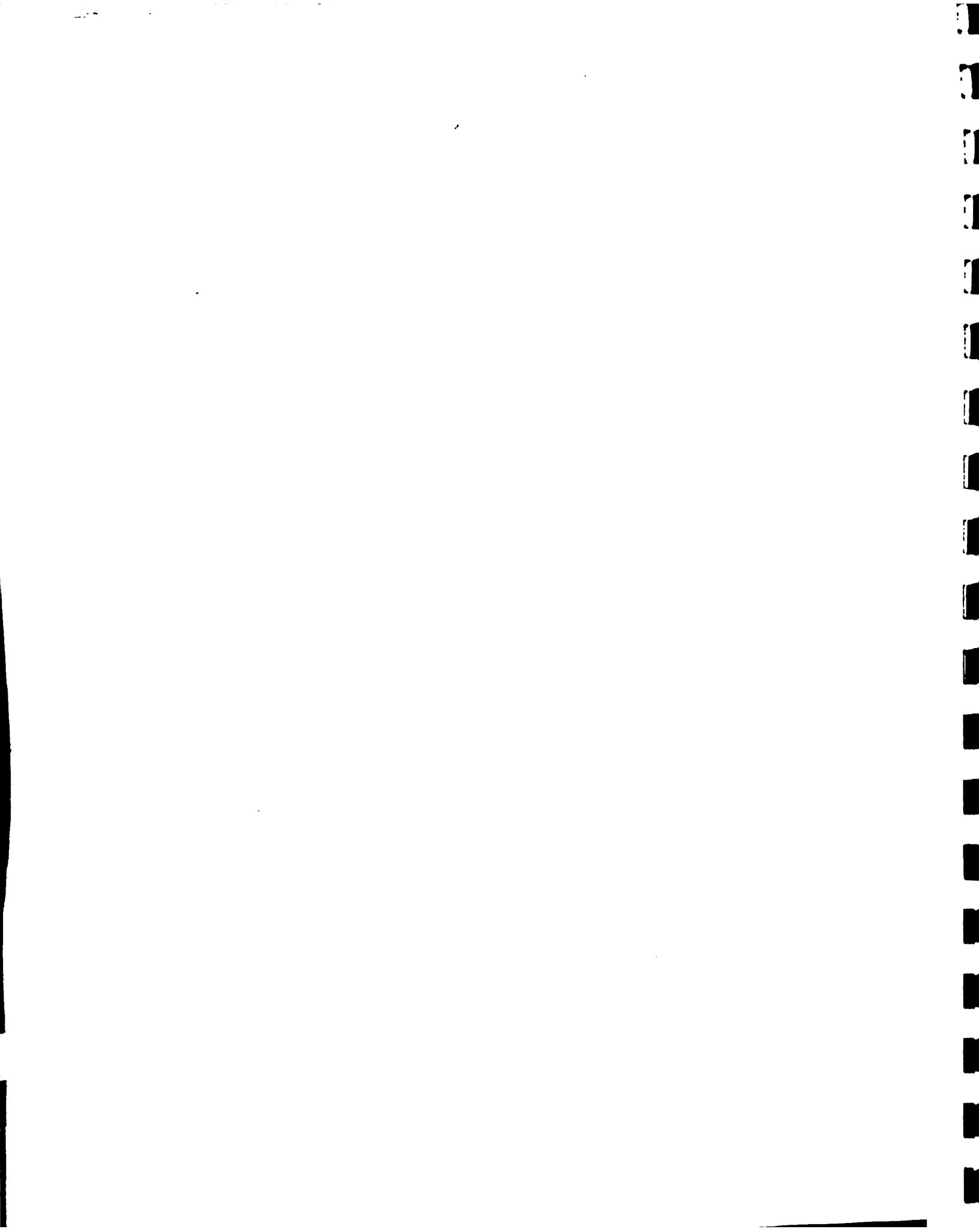
COEFFICIENTS*	YEARS										
	0	1	2	3	4	5	6	7	8	9	10
Total Pasture land (ha)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Improv. pasture land (ha)**	0.3	1.3	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Stocking rate (au/ha)	4.5	3.3	5.7	6.2	7.8	9.2	9.8	9.7	9.8	10	9.7
Farm stocking rate (au)	6.75	5	8.5	9.25	11.75	13.75	14.75	14.75	14.75	14.75	14.5
Gross calving rate (%)	60	60	65	65	70	75	75	75	75	75	75
Calf mortality (%)	20	20	15	10	8	8	7	7	6	5	5
Net calving rate (%)	48	48	56	59	64	69	70	70	71	71	71
Adult mortality (%)	10	7	5	5	3	2	2	2	2	2	2
Culling rate (%)											
Cows							16.67	23.08	23.08	23.08	23.08
Bulls	100										
Heifers							25	25		25	
Calves		50	60	40	50	28.57	50	50	50	37.5	50
Bull/Cow rate	25										
Milk prod./cow on milking	4	4	6	6	7	7	8	8	8	8	8
Lactation length DAYS	180	180	200	210	240	260	270	275	280	285	290
Herd extraction rate											
Milk prod/ha/year/(L)	1152	1152	3640	3822	6272	8190	10800	11000	11200	11400	11600

* Source: from 1984 Ford/Munoz Para, Saramacca and Suriname Dairy Farm Survey and adjusted by IICA - M of A 1987 Dairy Farm Survey and LVV census 1984, 1985 and 1986.
 ** Based on planting elephant grass.



DAIRY HERD PROJECTION
 FARM MODEL A. 1.5 HA FARM SIZE ZERO GRAZING SYSTEM IV.1.2(iii)

CATEGORIES	YEARS										
	0	1	2	3	4	5	6	7	8	9	10
1. Breeding cows & Heifers transferred & Heifers Purchased	4	4	4	7	7	7	9	10	10	10	10
- Deaths			2		2		2	3	3	3	3
- Culled											
Total cows in Product.	4	4	7	7	8	9	10	10	10	10	10
2. Calves born:	2	2	5	5	6	7	8	8	8	8	8
- Deaths						1		1		1	
- Culled		1	3	2	3	2	4	4	4	3	4
Total (net) calves	2	1	2	3	3	4	4	3	4	4	4
3. Heifers 12-24 mos old:	1		1	2	3	3	4	4	3	4	4
- Deaths											
- Culled											
Total (net) calves	1	0	1	2	3	3	3	3	3	3	4
4. Heifers 24-36 mos old:											
- Deaths		1		1	2	3	3	3	3	3	3
- Culled											1
Total (net) calves	0	1	0	1	2	3	3	3	3	3	2
5. Fattening Bulls											
Steers Purchased											
- Deaths											
- Sold											
Total net											
6. Bulls	1										
Bulls Purchased:											
- Deaths											
- Culled											
Total bulls on Service	1										
7. Tot. no's of animals	8	6	10	13	16	19	20	19	20	20	20
8. Total Animal Units	6.5	5.0	8.0	9.5	11.75	13.75	14.75	14.5	14.75	14.75	14.5



FARM MODEL A
ESTIMATED INVESTMENTS

IV-J-2(jy)

CONCEPT	1	2	3	4	5	6	7	8	9	10
1. Planting grass										
-cutting grass	1000	200								
2. Production infrastr.uct.										
-external fence										
-internal fence										
-water pump & instalat.						780				
-cow & calf pens room		17400								
-milk and store room										
-milking parlour										
-internal drainage	450									
3. Equipment										
-chopping machine		1800								
-milking machine										
-solar or elect. fence										
-working tool & mechanical kit	350									
-spray pump	350				120		120			
-buckets	120									120
-wheel barrow	300					300				
4. Animals										
-breeding cows	6800									
-heifers 2-3 yrs.										
-heifers 1-2 yrs.										
-calves < 1yr.										
-bulls										
6. Sub-total	9370	19400	120	0	120	1430	120	0	120	0
7. Contingencies	937	1940	12	0	12	143	12	0	12	0
8. Grand total	10307	21340	132	0	132	1573	132	0	132	0



FARM MODEL: A 1.5 HA FARM SIZE ZERO GRAZING SYSTEM
 APPENDIX OF CAPITAL COSTS

Note

- 1. Replacement of only water and spray pump, chopping and milking machine, carry wheel every 5 year
- 2. Replacement of buckets every second year
- 3. Tractor, plough, harrow should be borrowed from cooperative organization or from the Ministry
- 4. Replacement of waterpump, the price included installation.
- 5. Pasture for cutting is also for silage.

Assumptions and Specifications

- * Water pump & Installation include
 - 1. Waterpump
 - 2. Installation water supply system
 - 3. Installation of waterpump & water supply system
 - 4. 6 meter deep well + installation
- ** Cow & Calf pens, milk room, store room = 58 M
 - ..21... M2 cow pens
 - ..12... M2 Calf pens
 - ..16... M2 Milk room
 - ...9... M2 Store room



OPERATIVE COSTS PROJECTION SF.
 FARM MODEL A. 1.5 HA. FARM SIZE ZERO GRAZING SYSTEM *
 IV.1.2(vi)

CATEGORIES	YEARS											TOTAL	
	UNIT	0	1	2	3	4	5	6	7	8	9		10
1. MAN POWER													
- Permanent													
- Occasional													
- Family Labour*	Day	0.5	20	3650	3650	3650	3650	3650	3650	3650	3650	3650	36500
2. Production Inputs													
- Feeds**	Kg	/year	0.45	821	1396	1519	2895	3388	4845	4763	4845	4845	34080
- Molasses													
- Minerals & Drugs***	Animal	/year	20	120	220	280	320	380	400	380	400	400	3300
- Detergent&Clean.													
- Mat. & Milking Mat.	Animal	/year	5	30	55	70	80	95	100	95	100	100	825
- Electricity	/year	600	600	600	600	600	600	600	600	600	600	600	6000
- Fuels & Trans- portation***	/year	1820	1820	1820	1820	1820	1820	1820	1820	1820	1820	1820	18200
3. Breeding Service													
- Bull Service													
- Artificial													
4. Pasture Maintenance													
- Cleaning	Dosis	2/cow	10	80	80	140	140	140	180	200	200	200	1560
- Fertilizer													
- Drainage													
5. Equipment Maint.													
- Chopping machine	1	0.05	1600		80	80	80	80	80	80	80	80	560
- Milking machine													
- Waterpump & Inst.	1	0.05	4687		234	234	234	234	203	234	234	234	2075
6. Buildings & Fences													
- Milking parlour													
- Cows & Calves pens	1	0.05	17400		870	870	870	870	870	870	870	870	6960
- Milk & Store room													
- External fence													
- Internal fence													
7. Farm Prod. consumed													
- Milk for home use	1	548	0.75	411	411	411	411	411	411	411	411	411	4110
- Milk animal use	300	1/calf/y	225	225	450	675	675	900	900	900	900	900	7200
- Land rent	HA	25	38	38	38	38	38	38	38	38	38	38	380
8. Sub total			6108	7795	8954	10387	11813	12606	14097	13736	14148	14148	121750
9. CONTINGENCIES 10%													
			611	780	895	1039	1181	1261	1410	1374	1415	1415	12175
10. TOTAL ANNUAL COSTS													
			6719	8575	9849	11426	12994	13867	15507	15110	15563	15563	133925

* Includes Family Labour



FARM MODEL A
ESTIMATED OPERATIONAL COSTS *

IV.1.2(vii)

CONCEPT	1	2	3	4	5	6	7	8	9	10
W/O PROJ.										
1. Labour										
-permanent										
-part time										
2. Production Inputs										
-feeds	821.0	1396.0	1519.0	2895.0	3388.0	4845.0	4763.0	4845.0	4845.0	4763.0
-molasses										
-minerals and drugs										
-detergents, cleaning										
and milking materials	30.0	55.0	70.0	80.0	95.0	100.0	95.0	100.0	100.0	100.0
-electricity	300.0	420.0	420.0	420.0	420.0	420.0	420.0	420.0	420.0	420.0
-fuels & transportation	1100.0	1650.0	1650.0	1650.0	1820.0	1820.0	1820.0	1820.0	1820.0	1820.0
3. Breeding service										
-bull service	80.0	80.0	40.0	40.0	40.0	180.0	200.0	200.0	200.0	200.0
-artificial insemination										
4. Pasture maintenance										
-cleaning										
-fertilizer										
-drainage										
5. Equipment maintenance										
-chopping machine			90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0
-milking machine										
-waterpump & installation	234.0	234.0	234.0	234.0	234.0	234.0	234.0	234.0	234.0	234.0
6. Building & fences										
-milking parlour										
-cow & calves pen										
milking & store room										
-external fence										
-internal fence										
7. Land rent	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0
8. GRAND TOTAL	1425.0	3026.0	4080.0	5198.0	6624.0	8984.0	8897.0	9004.0	9004.0	8922.0
9. GRAND TOTAL	1425.0	3026.0	4080.0	5198.0	6624.0	8984.0	8897.0	9004.0	9004.0	8922.0
10. GRAND TOTAL	1567.5	3328.6	4488.0	5717.8	7286.4	8098.2	9882.4	9786.7	9904.4	9814.2

* Excludes Family Labour



FARM MODEL: A 1.5 HA FARM SIZE ZERO GRAZING SYSTEM
APPENDIX OF OPERATIVE COSTS

Note

1. Family labour; part time farmer
2. Fertilizer: only cow manure
3. Only 90 days supply of milk to calves
4. Building maintenance, the next year after being built
5. In year 0 no AI needed because we have a bull

Assumptions and Specifications

- * Assumed family labour SF 20,=
** Feeds: Year 0 - Year 3 1 kg/AU/day
Year 4 and 5 1.5 kg/AU/day
Year 6 - Year 10 2 kg/AU/day
*** Package/year/animal
**** Transportation: Car rent cost
52 x 35 = Sf. 1820,=
***** Year of purchase of an equipment,
No equipment maintenance needed
***** rent Sf. 25 per ha.



INCOME FROM SALES ANIMALS AND PRODUCTS.
 FARM MODEL A. 1.5 HA FARM SIZE ZERO GRAZING SYSTEM IV.1.2(ix)

CATEGORIES	YEARS										TOTAL		
	0	1	2	3	4	5	6	7	8	9		10	
1. MATURE COWS													
4+ yrs old 400 kg						4900	7350	7350	7350	7350	7350	7350	34300
1+ yr old 150 kg													
2. HEIFERS													
2-3 yrs old 300kg													
1-2 yrs old 250kg													
1+ yr old 150 kg						2835	2835		3835				9505
3. BULLS													
3+ yrs old 500kg													4676
2-3 yrs old 400kg													
1-2 yrs old 300kg													
1+ yr old 200kg													
4. CALVES													
1 week old	1500	4500	3000	4500	3000	6000	6000	6000	6000	4500	6000	6000	45000
1 yr old 100 kg													
5. STEERS													
3+ yrs old 400kg													
2-3 yrs old 300kg													
1-2 yrs old 200kg													
1+ yrs old 100kg													
6. MILK													
Farm Gate L	3240	1296	4095	4300	7056	9214	12150	12375	12600	12825	13050	88961	
Milk Plant L													
7. TOTAL													
	3240	7472	8595	7300	11556	12214	20985	21210	18600	21160	19050	148142	



FARM MODEL A
ESTIMATED INCREMENTAL CASH FLOW IV.1.2(x)

CONCEPT	W/O PROJ	1	2	3	4	5	6	7	8	9	10
I. SOURCES											
Total incremental		4232.0	5355.0	4060.0	8316.0	8974.0	22645.0	25320.0	22710.0	25270.0	23160.0
Total	3240.0	7472.0	8595.0	7300.0	11556.0	12214.0	25885.0	28560.0	25950.0	28510.0	26400.0
1. Sales of animals		6176.0	4500.0	3000.0	4500.0	3000.0	13735.0	16185.0	13350.0	15685.0	13350.0
2. Sales of milk		1296.0	4095.0	4300.0	7056.0	9214.0	12150.0	12375.0	12600.0	12825.0	13050.0
II. USES OF FUNDS											
Total incremental		12068.1	24260.5	4282.3	5718.9	6662.7	9887.9	8351.2	8336.9	8468.9	8246.7
Total	1567.5	13635.6	25828.0	5849.8	7286.4	8230.2	11455.4	9918.7	9904.4	10036.4	9814.2
1. Investments		10307.0	21340.0	132.0	0.0	132.0	1573.0	132.0	0.0	132.0	0.0
2. Operational costs	1567.5	3328.6	4488.0	5717.8	7286.4	8098.2	9882.4	9786.7	9904.4	9904.4	9814.2
III. CASH FLOW											
		-7836.1	-18905.5	-222.3	2597.1	2311.3	12757.1	16968.8	14373.1	16801.1	14913.3
IRR		0.20									
NPV(8%)		20859.53									



FARM MODEL A
ESTIMATED CASH FLOW WITH DEBT SERVICE

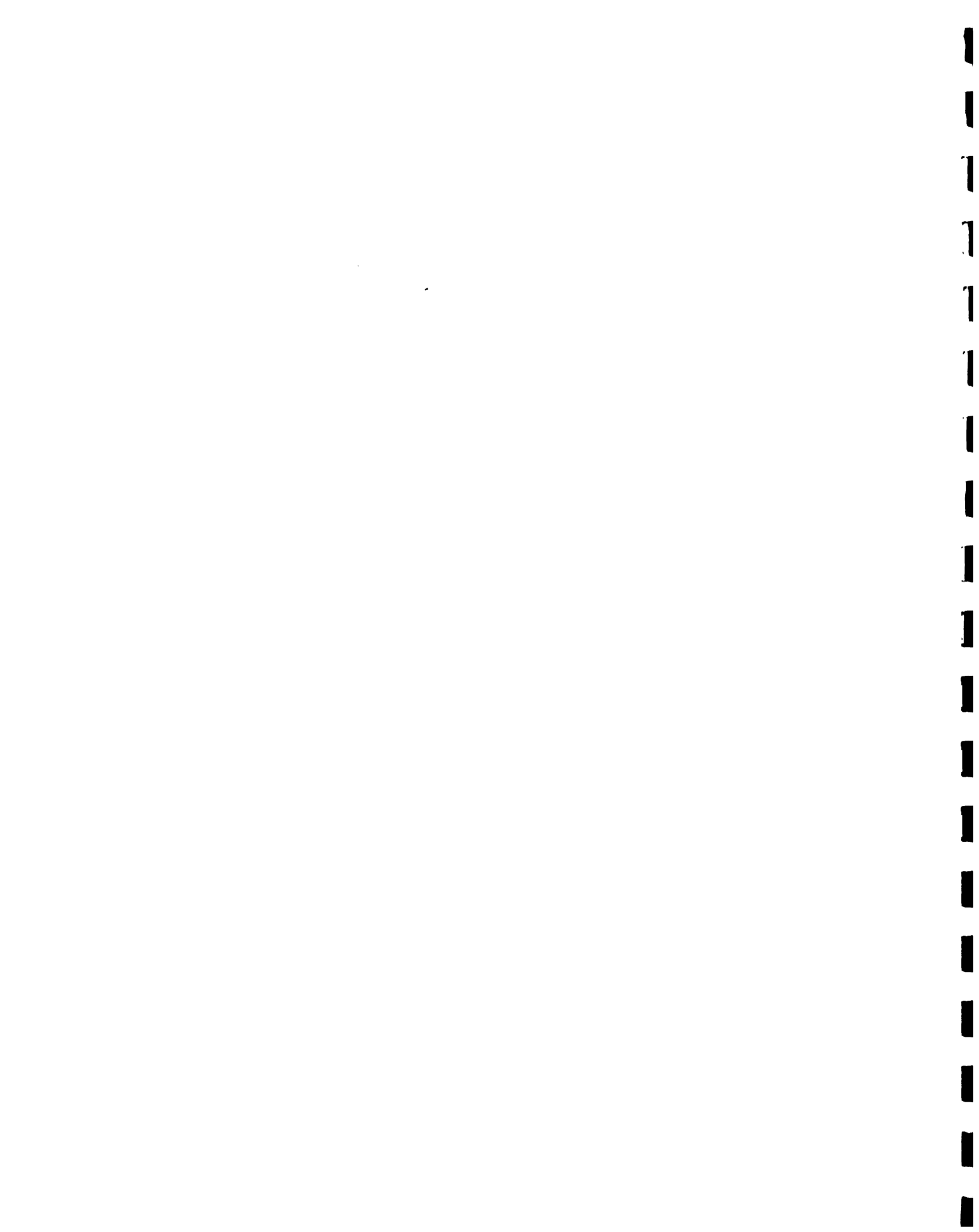
IV.1.2(xi)

CONCEPT	1	2	3	4	5	6	7	8	9	10
I. SOURCES	7472.0	8595.0	7300.0	11556.0	12214.0	25885.0	28560.0	25950.0	28510.0	26400.0
1. Sales of animals	6176.0	4500.0	3000.0	4500.0	3000.0	13735.0	16185.0	13350.0	15685.0	13350.0
2. Sales of milk	1296.0	4095.0	4300.0	7056.0	9214.0	12150.0	12375.0	12600.0	12825.0	13050.0
II. USES OF FUNDS	13635.6	25828.0	5849.8	7286.4	8230.2	11455.4	9918.7	9904.4	10036.4	9814.2
1. Investments	10307.0	21340.0	132.0	0.0	132.0	1573.0	132.0	0.0	132.0	0.0
2. Operational costs	3328.6	4488.0	5717.8	7286.4	8098.2	9882.4	9786.7	9904.4	9904.4	9814.2
III. CASH FLOW BEFORE DEBT SERVICE	-6163.6	-17233	1450.2	4269.6	3983.8	14429.6	18641.3	16045.6	18473.6	16585.8
IV. LOANS AND DEBT SERVICE										
1. Loans	6500.0	18000.0	1000.0							
Principal		24500.0	25500.0	25500.0	25500.0	21153.4	16459.1	11389.2	5913.7	0.2
2. Debt service	0.0	520.0	1960.0	2040.0	2440.0	6386.6	6386.6	6386.6	6386.6	6386.6
interests (8%)		520.0	1960.0	2040.0	2440.0	2040.0	1692.3	1316.7	911.1	473.1
-amortization						4346.6	4694.3	5069.9	5475.5	5913.5
V. CASH FLOW	336.4	247.0	490.2	2229.6	1543.8	8043.0	12254.7	9659.0	12087.0	10199.2



CAPITAL AND OPERATIVE COSTS SUMMARY AND
FOREIGN CURRENCY NEEDS
FARM MODEL: 1.5. HA ALL FARMS IV.1.2(xii)

COST CATEGORIES	TOTAL	LOCAL CURRENCY (000)	FOREIGN CURRENCY (000)
A. CAPITAL			
1. Pasture Establishment	251.7	227.0	24.7
2. External fence			
3. Internal fence			
4. Water supply,	787.5	37.0	750.5
5. Internal drain	450.0	450.0	
6. Buildings			
6.1 Cow & Calf pens	2923.2	2035.0	888.2
6.2 Milking parlour			
7. Equipment			
7.1 Chopping machine	604.8		604.8
7.2 Milking machine			
7.3 Solar or elect. fence			
7.4 Spray pump	117.6		117.6
8. Tools			
8.1 Working tool kit	58.8		58.8
8.2 Mechanics tool kit			
9. Animals			
9.1 Breeding cows			
9.2 Heifers 2-3 years	1142.4		1142.4
9.3 Heifers 1-2 years			
9.4 Calves less a year			
9.5 Bulls			
10. Other Investments	201.6		201.6
B. OPERATIVE COSTS			
1. Personnel	6132.0	6132.0	
2. Feed Supplement	5725.4	5725.4	
3. Veterinary Inputs	693.0		693.0
4. Electricity	1008.0	1008.0	
5. Fuels & Transportation	3057.6	3057.6	
6. Breeding service	262.1		262.1
7. Maintenance			
7.1 Pastures			
7.2 Equipment	442.7	442.7	
7.3 Building & Fences	1169.3	1169.3	
8. Milk for home & animal use	1900.1	1900.1	
TOTAL	26927.8	22184.1	4743.7



ANNEXES
TO CHAPTER IV
THE PROJECT

FARM MODEL B: 4.5 HA

IV.1.3

1950
1951
1952
1953
1954

DAIRY HERD COMPOSITION FOR FARMS MODEL 'B' OF 4.5 HA SIZE
IN SURINAME, PARA AND SARAMACCA DISTRICTS*

IV.1.3(i)

ANIMAL CATEGORIES	SURINAME		PARA		SARAMACCA		GRAND TOTAL					
	TOTAL AVERAGE	A.U	TOTAL AVERAGE	A.U	TOTAL AVERAGE	A.U	TOTAL AVERAGE	A.U				
Number of farms	35.00		4.00		6.00		45.00					
Bulls	81.00	2.30	121.50	2.00	0.50	3.00	9.00	1.50	13.50	92.00	2.00	138.00
Cows on Milk	117.00	3.30	117.00	10.00	2.50	10.00	9.00	1.50	9.00	136.00	3.00	136.00
Dry cows	225.00	6.40	225.00	2.00	0.50	2.00	25.00	4.20	25.00	252.00	5.60	252.00
Total Cows												8.60
Heifers												
2-3 years old	37.00	1.10	27.75	2.00	0.50	1.50	7.00	1.20	5.25	46.00	1.00	34.50
1-2 years old	58.00	1.70	29.00	1.00	0.25	0.50	6.00	1.00	3.00	65.00	1.40	32.50
Calves 0+9 mos.	129.00	3.70	32.25	5.00	1.25	1.25	14.00	2.30	3.50	148.00	3.30	37.00
TOTAL	647.00	18.50	552.50	22.00	5.50	18.25	70.00	11.70	59.25	739.00	16.30	630.00
ANIMAL UNITS**												

* Source: 1984 FORD/MUNOZ. Suriname, Para and Saramacca Districts Dairy Farms Survey

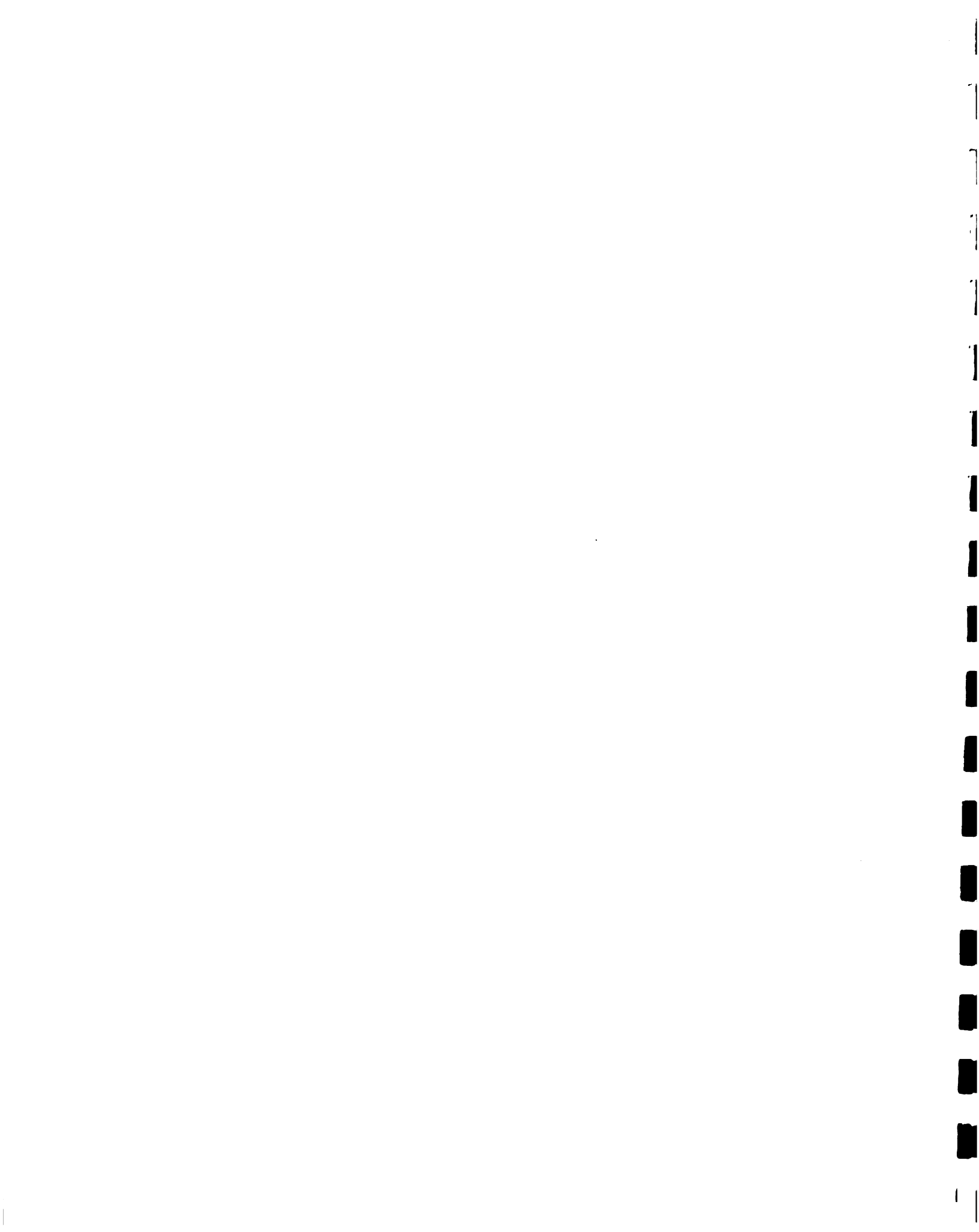


TECHNICAL COEFFICIENTS USED IN THE FARM MODELS
 FARM MODEL B. 4.5HA FARM SIZE GRAZING SYSTEM

IV.1.3(ii)

COEFFICIENTS*	YEARS										
	0	1	2	3	4	5	6	7	8	9	10
Total Pasture land (ha)	4	4	4	4	4	4	4	4	4	4	4
Improved pasture land	0.8	1.9	2.9	4	4	4	4	4	4	4	4
Stocking rate (t.u./ha)	3.5	2.5		4	4	4	4	4	4	4	4
Farm Stocking rate (tau)	14										16
Gross calving rate (%)	60	60	65	65	70	75	75	75	75	75	75
Calf mortality (%)	20	20	15	10	8	8	7	7	6	5	5
Net calving rate (%)	48	48	56	59	64	69	70	70	71	71	71
Adult mortality (%)	10	7	5	5	3	2	2	2	2	2	2
Culling rate (%)											
Cows					25	14.29	14.29	20	20	20	20
Bulls		100									
Heifers					33.33			25	33.33		
Calves		50	42.86	62.5	50	44.44	44.44	55.56	55.56	44.44	55.56
Bull/Cow rate (%)		22.22									
Milk prod./cow on milking	4	5	6	6	7	7	8	8	8	8	8
Lactation lenght	180	190	200	210	240	260	270	275	285	285	290
Herd extraction rate											
Milk prod./ha/yr/(L)	972	1425	2141	2662	3528	4095	4860	4950	5130	5130	5220

* Source: from 1984 Ford/Munoz Para, Saramacca and Suriname Dairy Farm Survey and adjusted by IICA - M of A 1987 Dairy Farm Survey and LVV census 1984, 1985 and 1986.



DAIRY HERD PROJECTION
 FARM MODEL B.4.54A FARM SIZE GRAZING SYSTEM
 IV.1.3(iii)

ANIMALS CATEGORIES	YEARS										
	0	1	2	3	4	5	6	7	8	9	10
1. Breeding Cows + Heifers transferred + Heifers purchased	9	9	10	11	13	12	12	12	12	12	12
- Deaths					1						
- Culled					4	2	2	3	3	3	3
Total cows in production	9	10	11	13	12	12	12	12	12	12	12
2. Calves born:	3	6	7	8	8	9	9	9	9	9	9
- Deaths			1	1	1	1	1	1	1	1	1
- Culled			3	5	4	4	4	5	5	4	5
Total (net) calves	3	3	3	3	3	4	4	3	3	4	3
3. Heifers 12-24 mos old	1	3	3	3	3	3	4	4	3	3	4
- Deaths							1				
- Culled					1			1			
Total (net)	1	3	3	3	2	3	3	3	3	2	4
4. Heifers 24-36 mos old	1	1	3	3	3	2	3	3	3	2	2
- Deaths											
- Culled					1						
Total (net)	1	1	3	3	2	2	3	3	3	2	1
5. Bulls											
Bulls purchased											
- Deaths											
- Culled											
Total Bulls on service	2	AI	AI	AI	AI	AI	AI	AI	AI	AI	AI
6. Total numbers of animals	16	17	20	22	19	21	22	21	21	21	20
7. Total animal unit	14	13	15.5	17.5	15.25	16	16.8	16.5	16.5	16.75	15.5



MODEL FARM B
CAPITAL COSTS PROJECTION

IV.1.3 (iv)

CONCEPT	1	2	3	4	5	6	7	8	9	10
1. Planting grass										
-cutting grass	500.0									
-pasture	1000.0	1000.0	1100.0							
2. Production infrastr.:										
-external fence										
-internal fence	1100.0									
-water pump & instalat.	4687.0					780.0				
-cow & calf pens										
milk and store room		3000.0	3000.0							
milking parlour		2700.0								
-internal drainage	300.0	300.0	300.0							
3. Equipment										
-chopping machine		1800.0								
-milking machine			1600.0							
-solar or elect. fencer	425.0					425.0				
-working tool & mechanical kit	350.0									
-spray pump		350.0								
-buckets	120.0		120.0				120.0			120.0
-wheel barrow	300.0									
-churns	300.0		300.0							300.0
4. Animals										
-breeding cows										
-heifers 2-3 yrs.										
-heifers 1-2 yrs.										
-calves < 1yr.										
-bulls										
5. Sub-total	9082.0	9150.0	6420.0	0.0	120.0	2155.0	120.0	300.0	120.0	0.0
6. Contingencies	908.2	915.0	642.0	0.0	12.0	215.5	12.0	30.0	12.0	0.0
7. Grand total	9990.2	10065.0	7062.0	0.0	132.0	2370.5	132.0	330.0	132.0	0.0



FARM MODEL B. 4.5 HA FARM SIZE
 GRAZING SYSTEM
 appendix of capital costs

IV.1.3(v)

Note

1. Replacement of only water and spray pump, chopping and milking machine, solar fence, spray pump and carry wheel every 5 year
2. Replacement of buckets every second year
3. Tractor Plough, harrow should be borrowed from co-operations or government
4. Replacement of waterpump, the price included installation
5. Pasture for cutting mainly for silage
6. External fence is already being placed.

Assumptions and Specifications

* Waterpump & Installation included:

1. Waterpump
2. Installation water supply system
3. Installation of waterpump & water supply system
4. 6 meter deep well + installation

** Cow & Calf pens, milk room, store room = 93 M
 M2 cow pens
 M2 Calf pens
 M2 Milk room
 M2 Store room
 ...9. M2 Milking Parlour

*** To improve only 29 M2, milk room, store room, milking parlour



IV.1.3 (vi)

DIAGNOSTIC COSTS PROJECTION.
FARM MODEL 4.5 HA FARM SIZE GRAZING SYSTEM *

COST CATEGORIES	UNIT	NO. OF UNITS	COST UNIT	YEARS										TOTAL						
				0	1	2	3	4	5	6	7	8	9		10					
1. Man power																				
- Permanent																				
- Occasional	Day	0.25	20	1825	1825	1825	1825	1825	1825	1825	1825	1825	1825	1825	1825	1825	1825	1825	1825	1825
- Family Labour*	Day	0.5	20	3650	3650	3650	3650	3650	3650	3650	3650	3650	3650	3650	3650	3650	3650	3650	3650	3650
2. Production Inputs																				
- Feeds**	Kg	au	0.45	2300	2135	2546	2874	3757	3942	5502	5420	5420	5420	5502	5420	5502	5092	42190		
- Molasses																				
- Minerals & Drugs***	Animal	/year	20	320	340	400	440	380	420	440	420	420	420	420	420	420	400	4080		
- Detergent & Cleaning Material & Milking Material	Animal	/year	5	80	100	110	110	95	105	110	105	105	105	105	105	105	105	1025		
- Electricity	/year		600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	6000		
- Fuels & Transportation***	/year		2600	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600	26000		
3. Breeding Service																				
- Bull service	Dosis	2/cow	10	200	220	220	260	240	240	240	240	240	240	240	240	240	240	2360		
- Artificial Insemination																				
4. Pasture Maintenance																				
- Cleaning																				
- Fertilizer	4 bag/ha	4ha	100	190	290	400	400	400	400	400	400	400	400	400	400	400	400	3680		
- Drainage	M	200	3	600	600	600	600	600	600	600	600	600	600	600	600	600	600	2400		
5. Equipment Maintenance																				
- Chopping Machine	1	5%	1800	90	90	90	90	90	90	90	90	90	90	90	90	90	90	630		
- Milking Machine	1	5%	1600	80	80	80	80	80	80	80	80	80	80	80	80	80	80	480		
- Waterpump & Installation	1	5%	4687	234	234	234	234	234	234	203	234	234	234	234	234	234	234	2075		
6. Building & Fences																				
- Milking parlour	1	5%	1800	90	90	90	90	90	90	90	90	90	90	90	90	90	90	720		
- Cows & Calves pens																				
- Milk- & Store room	1	5%	18800	200	940	940	940	940	940	940	940	940	940	940	940	940	940	9400		
- External fence	1	5%	6000	150	300	300	300	300	300	300	300	300	300	300	300	300	300	3000		
- Internal fence	1	5%	1100	55	55	55	55	55	55	55	55	55	55	55	55	55	55	495		
7. Farm Prod. consumed																				
- Milk for home use	1	548	0.75	410	411	411	411	411	411	411	411	411	411	411	411	411	411	4110		
- Milk for animal. use	300/calf/year		225	675	675	675	675	675	675	675	675	675	675	675	675	675	675	7425		
8. Land rent	ha	4	25	100	100	100	100	100	100	100	100	100	100	100	100	100	100	1000		
9. Sub-total				11085	14051	14946	16254	16522	17582	18536	18745	18155	19142	17887	171820					
10. Contingencies 10%				1109	1405	1495	1625	1652	1758	1854	1875	1816	1914	1789	17182					
11. TOT. ANNUAL COSTS				12194	15456	16441	17879	18174	19340	20390	20620	19971	21056	19676	189002					

* Includes Family Labour

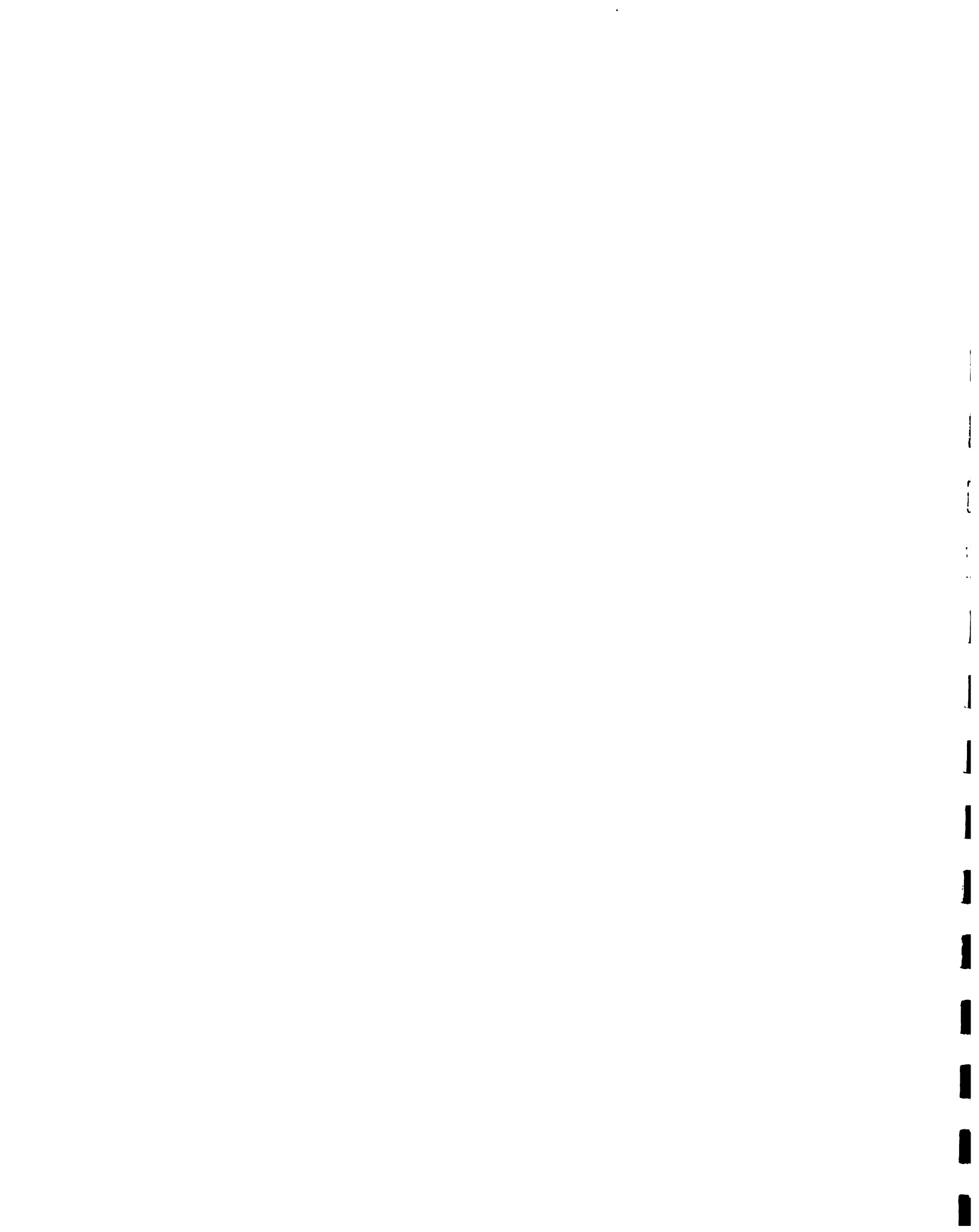


FARM MODEL B
ESTIMATED OPERATIONAL COSTS*

IV.1.3(vii)

CONCEPT	1	2	3	4	5	6	7	8	9	10
W/O PROJ.										
1. Labour	1825.0	1825.0	1825.0	1825.0	1825.0	1825.0	1825.0	1825.0	1825.0	1825.0
-permanent										
-part-time										
2. Production Inputs	760.0	2135.0	2874.0	3757.0	3942.0	5502.0	5420.0	5420.0	5502.0	5092.0
-feeds										
-molasses										
-minerals and drugs	320.0	340.0	440.0	380.0	420.0	440.0	420.0	420.0	420.0	400.0
-detergents, cleaning										
and milking materials	80.0	100.0	110.0	95.0	105.0	110.0	105.0	105.0	105.0	105.0
-electricity	300.0	600.0	600.0	600.0	600.0	600.0	600.0	600.0	600.0	600.0
-fuels & transportation	1000.0	1200.0	1400.0	1500.0	1500.0	1500.0	1500.0	1500.0	1500.0	1500.0
3. Breeding service										
-bull service	200.0	220.0	260.0	240.0	240.0	240.0	240.0	240.0	240.0	240.0
-artificial insemination										
4. Pasture maintenance	190.0	290.0	400.0	400.0	400.0	400.0	400.0	400.0	400.0	400.0
-cleaning										
-fertilizer			600.0		600.0		600.0		600.0	
-drainage										
5. Equipment maintenance			90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0
-chopping machine				80.0	80.0	80.0	80.0	80.0	80.0	80.0
-milking machine										
-waterpump & installation	234.0	234.0	234.0	234.0	234.0	234.0	234.0	234.0	234.0	234.0
6. Building & fences			90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0
-milking parlour										
-cow & calves pen										
milking & store room	550.0	550.0	550.0	550.0	550.0	550.0	550.0	550.0	550.0	550.0
-external fence	300.0	300.0	300.0	300.0	300.0	300.0	300.0	300.0	300.0	300.0
-internal fence	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0
7. Land rent	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
8. SUB-TOTAL	2560.0	6775.0	9928.0	10296.0	11131.0	12116.0	12609.0	12009.0	12691.0	11661.0
9. Contingencies	256.0	477.5	992.8	1029.6	1113.1	1211.6	1260.9	1200.9	1269.1	1166.1
10. GRAND TOTAL	2816.0	7452.5	10920.8	11325.6	12244.1	13327.6	13869.9	13209.9	13960.1	12827.1

* Excludes Family Labour



FARM MODEL B.4.5 HA FARM SIZE
 GRAZING SYSTEM
 appendix of operative costs

Note

1. In year 0, no AI needed, because we have bulls
2. Only 90 days supply of milk to calves
3. Building maintenance, the next year after being built
4. Maintenance of buildings and equipment is 5% of total costs
5. 4 members family.

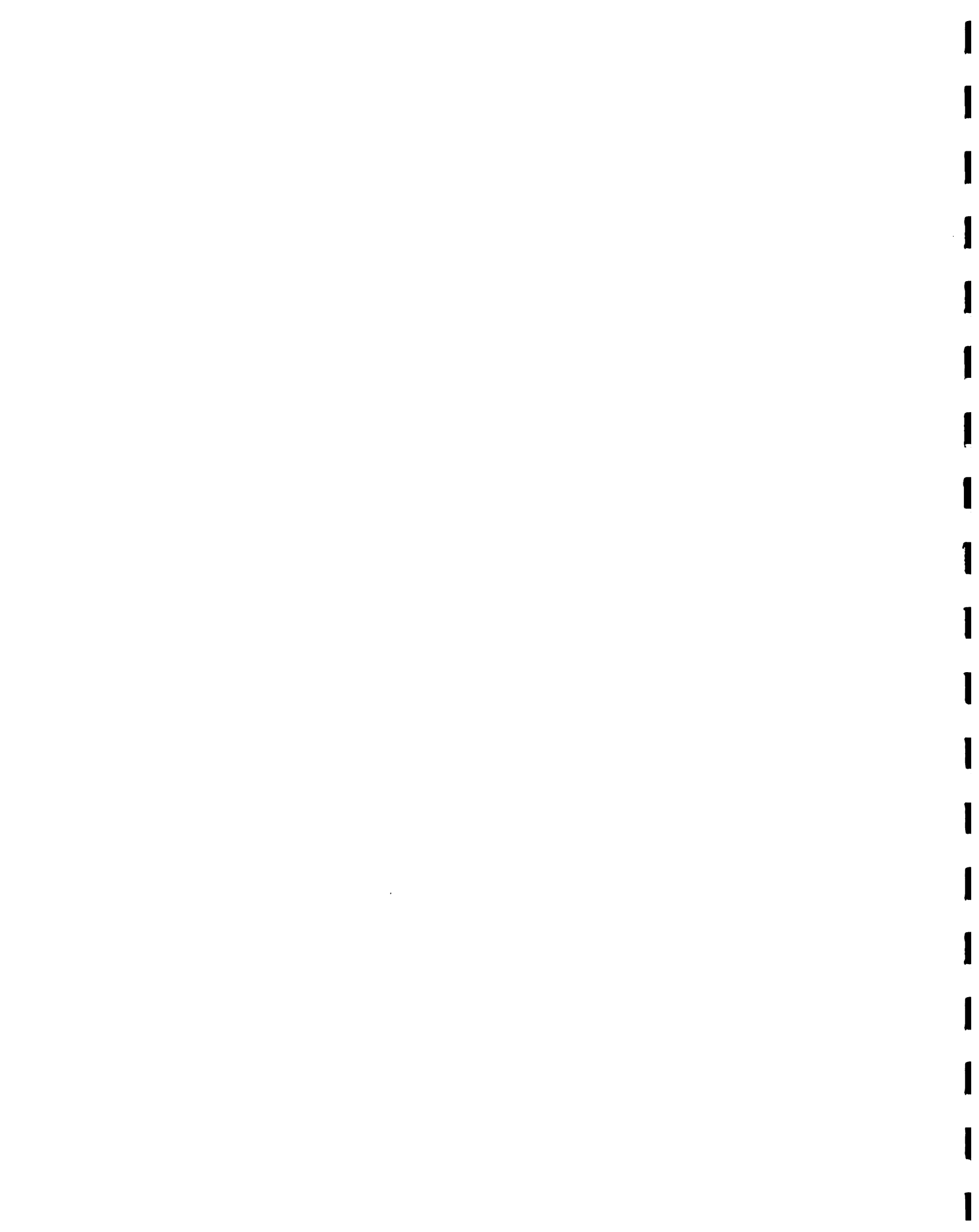
Assumptions and Specifications

- * Assumed occational and family labour SF. 20,=
- ** Feeds: Year 0 - Year 3 1 kg/AU/day
 Year 4 and 5 1.5 kg/AU/day
 Year 6 - Year 10 2 kg/AU/day
- *** Package/Year/Animal
- **** Transportation: Current Cost:
 52 x Sf 50 = Sf 2600,=
- ***** Year of purchase of an equipment
 No equipment maintenance needed.
- ***** Fertilizer 2 bags Urea
 2 bags NPK



INCOME FROM SALES ANIMALS AND PRODUCTS.
 FARM MODEL B.4.9HA FARM SIZE GRAZING SYSTEM

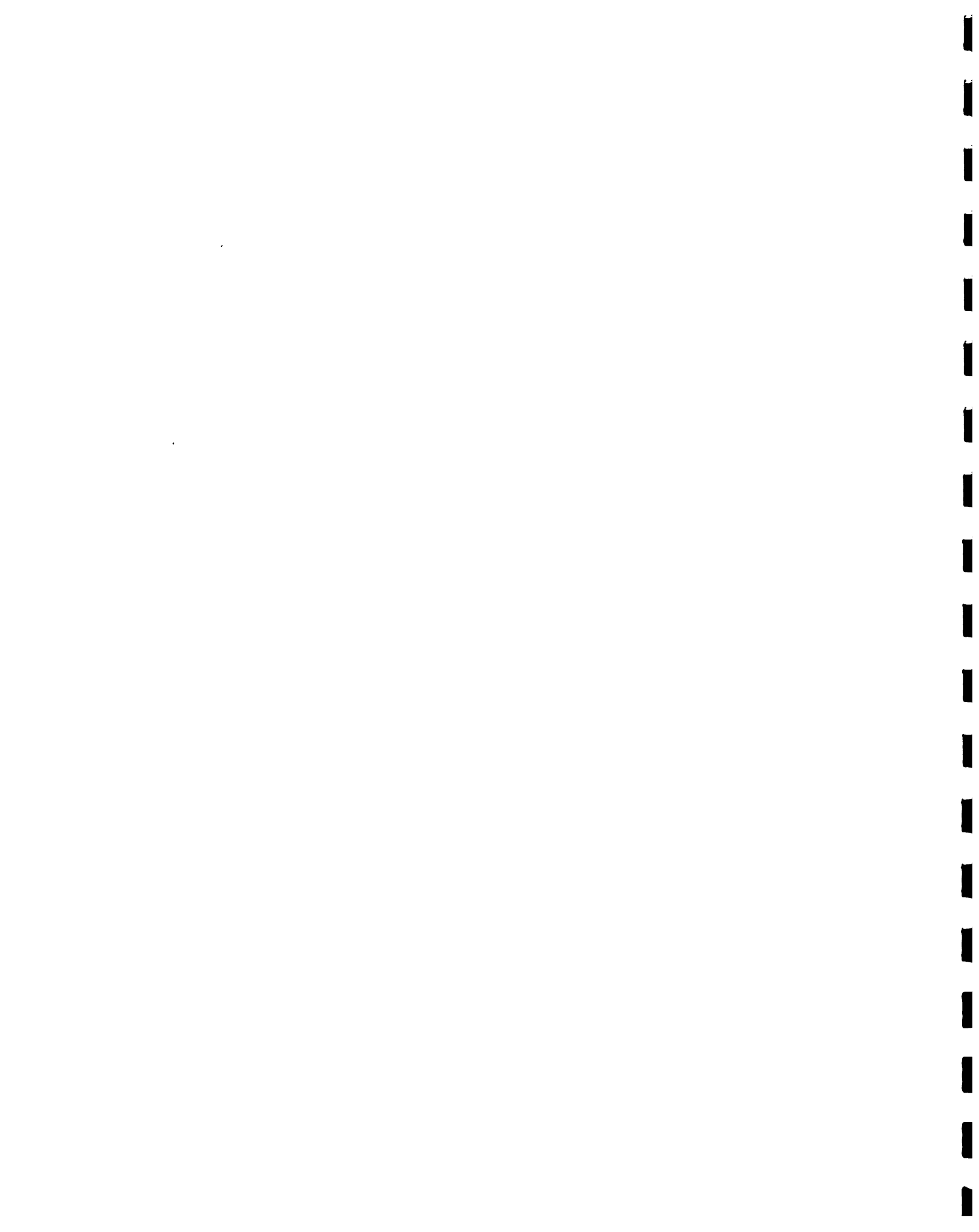
CATEGORIES	YEARS									
	1	2	3	4	5	6	7	8	9	10
TOTAL										
1. MATURE COWS										
- 4+ yrs old 400 kg				9800	4900	4900	7350	7350	7350	7350
2. HEIFERS										
- 2-3 yrs old 300 kg				3465						
- 1-2 yrs old 250 kg				2835			2835			2835
- 1+ yr old 150 kg										
3. BULLS										
- 3+ yrs old 500 kg										
- 2-3 yrs old 400 kg										
- 1-2 yrs old 300 kg										
- 1+ yr old 200 kg										
4. CALVES										
- 1 week old										
- 1 year old										
5. STEERS										
- 3+ yrs old 400 kg										
- 2-3 yrs old 300 kg										
- 1-2 yrs old 200 kg										
- 1+ yr old 100 kg										
6. MILK										
- Farm Gate L										
- Milk Plant L										
TOTAL	4275	6435	7985	10584	12285	14580	14850	15390	15390	15660
TOTAL	250722	18127	10935	15485	32684	23185	25480	32535	30240	31575



FARM MODEL B
ESTIMATED CASH FLOW WITH DEBT SERVICE
 (8f)

IV.1.3(x)

CONCEPT	1	2	3	4	5	6	7	8	9	10
I. SOURCES										
1. Sales of animals	18127.0	10935.0	15485.0	32684.0	23185.0	25480.0	32535.0	30240.0	31575.0	30510.0
2. Sales of milk	4275.0	6435.0	7985.0	10584.0	12285.0	14580.0	14850.0	14850.0	16185.0	14850.0
II. USES OF FUNDS										
1. Investments	9990.2	10665.0	7062.0	0.0	132.0	2370.5	132.0	330.0	132.0	0.0
2. Operational costs	7452.5	9262.0	10920.8	11325.6	12244.1	13327.6	13869.9	13209.9	13960.1	12827.1
III. CASH FLOW BEFORE DEBT SERVICE	684.3	-8392	-2497.8	21358.4	10808.9	9701.9	18533.1	16700.1	17482.9	17682.9
IV. LOANS AND DEBT SERVICE										
1. Loans										
Principal		8500.0	3200.0							
		8500.0	11700.0	11700.0	11700.0	9705.7	7551.9	5225.7	2713.5	0.2
2. Debt service										
-interests (8%)	0.0	0.0	680.0	936.0	936.0	2930.3	2930.3	2930.3	2930.3	2930.3
-amortization		0.0	680.0	936.0	936.0	1994.3	2153.8	2326.2	2512.2	2713.2
V. CASH FLOW	684.3	108.0	22.2	20422.4	9872.9	6851.6	15602.8	13769.8	14552.6	14752.6

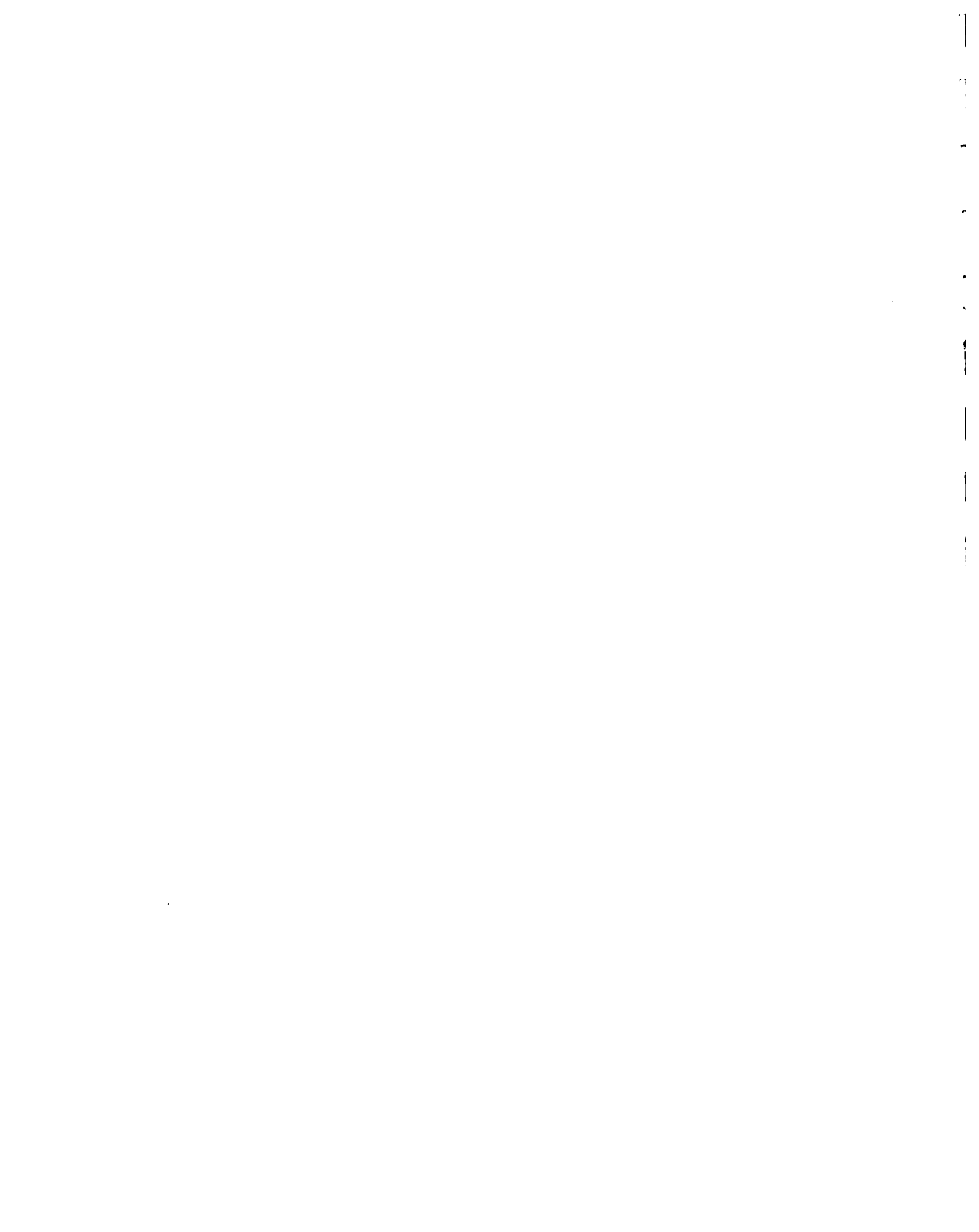


FARM MODEL B

IV.1.3(xi)

ESTIMATED INCREMENTAL CASH FLOW

CONCEPT	W/O PROJ	1	2	3	4	5	6	7	8	9	10
I. SOURCES											
Total incremental		7897.0	705.0	5255.0	22454.0	12955.0	15250.0	22305.0	20010.0	21345.0	20280.0
Total	10230.0	18127.0	10935.0	15485.0	32684.0	23185.0	25480.0	32535.0	30240.0	31575.0	30510.0
1. Sales of animals	6950.0	13852.0	4500.0	7500.0	22100.0	10900.0	10900.0	17685.0	14850.0	16185.0	14850.0
2. Sales of milk	3280.0	4275.0	6435.0	7985.0	10584.0	12285.0	14580.0	14850.0	15390.0	15390.0	15660.0
II. USES OF FUNDS											
Total incremental		14626.7	16511	15166.8	8509.6	9560.1	12882.1	11185.9	10723.9	11276.1	10011.1
Total		17442.7	19327.0	17982.8	11325.6	12376.1	15698.1	14001.9	13539.9	14092.1	12827.1
1. Investments		9390.2	10065.0	7062.0	0.0	132.0	2370.5	132.0	330.0	132.0	0.0
2. Operational costs	2816.0	7452.5	9262.0	10920.8	11325.6	12244.1	13327.6	13869.9	13209.9	13960.1	12827.1
III. CASH FLOW											
		-6729.7	-15806	-9911.8	13944.4	3394.9	2367.9	11119.1	9286.1	10068.9	10268.9
IRR		0.14									
NPV(8%)		7699.96									

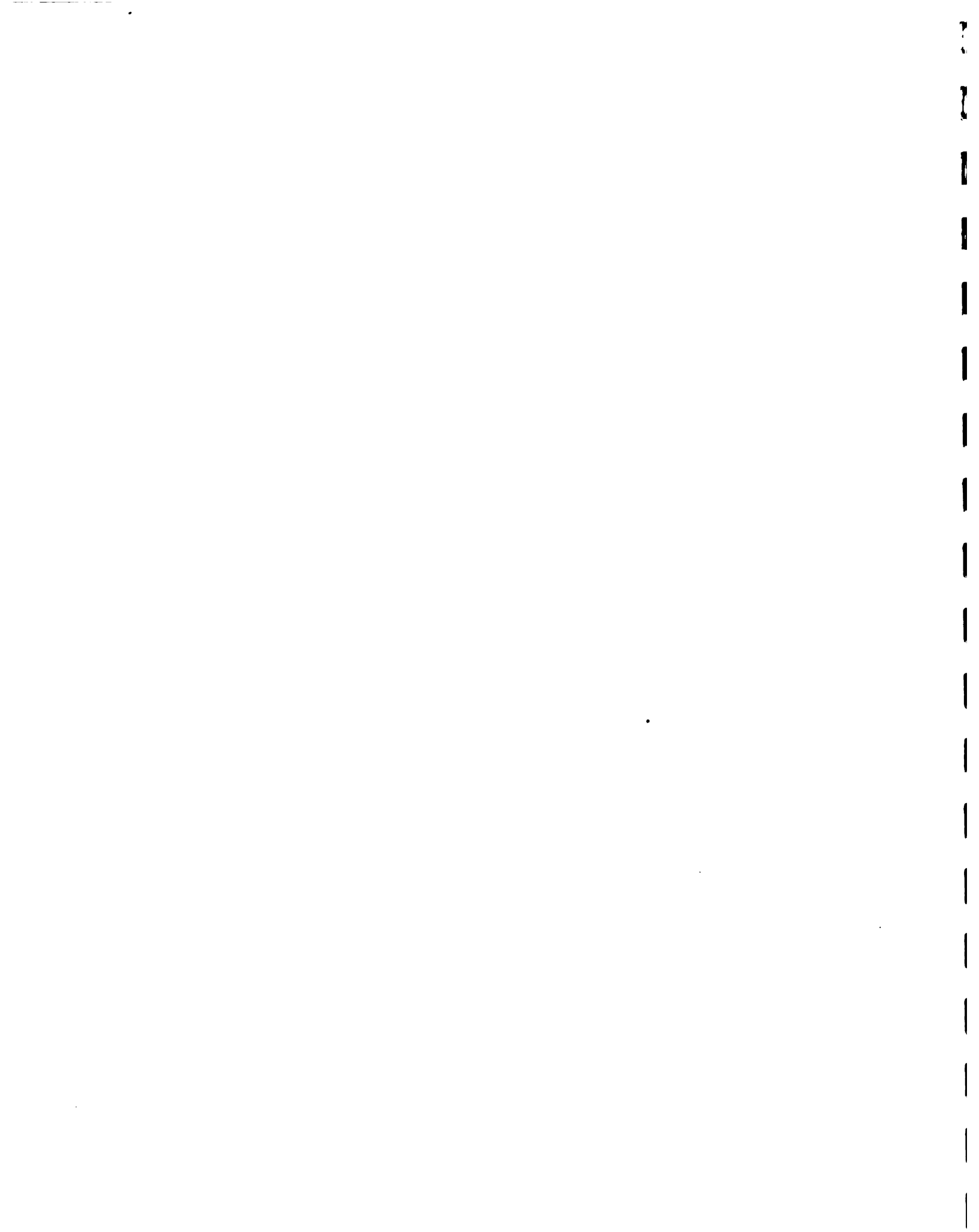


TABLE

CAPITAL AND OPERATIVE COSTS SUMMARY
AND FOREIGN CURRENCY NEEDS

FARM MODEL 4.5 HA ALL FARMS IV.1.3(xii)

=====				
COST CATEGORIES	TOTAL	SFL.	US\$	
		(000)	(000)	
=====				
A. CAPITAL				
=====				
1. Pasture Establishment	2000.0	1804.0	196.0	x
2. External fence				x
3. Internal fence	550.0	340.5	209.5	x
4. Water supply	2733.5	500.0	2233.5	x
5. Internal Drainage	450.0	450.0		x
6. Buildings				x
6.1 Cow & Calf pens	3000.0	2382.5	617.5	x
6.2 Milking Parlour	1035.0	765.0	270.0	x
7. Equipment				x
7.1 Chopping Machine	1800.0		1800.0	x
7.2 Milking machine	1600.0		1600.0	x
7.3 Solar or Elect.fence	212.5		212.5	x
7.4 Spray pump	350.0		350.0	x
8. Tool				x
8.1 Working tool kit +/-	175.0		175.0	x
8.2 Mechanics tool kit				x
9. Animals				x
9.1 Breeding Cows				x
9.2 Heifers 2-3 yrs.				x
9.3 Heifers 1-2 yrs				x
9.4 Calves less a yr				x
9.5 Bulls				x
10. Carry wheel and Buckets	600.0		600.0	x
=====				
B. OPERATIVE COSTS				
=====				
1. Personnel	27375.0	27375.0		x
2. Feed Supplement	21095.0	21095.0		x
3. Veterinary inputs	2552.5		2552.5	x
4. Electricity	3000.0	3000.0		x
5. Fuels & Transportation	13000.0	13000.0		x
6. Breeding Service	1180.0		1180.0	x
7. Maintenance				x
7.1 Pastures	3040.0	3040.0		x
7.2 Equipment	1592.5	1592.5		x
7.3 Building & Fences	6807.5	6807.5		x
8. Milk for home & Animal use	5767.5	5767.5		x
9. Land rent	500.0	500.0		x
=====				
TOTAL	100416.0	88419.5	11996.5	x
=====				



ANNEXES
TO CHAPTER IV
THE PROJECT

FARM MODEL C: 12.5 HA

IV.1.4



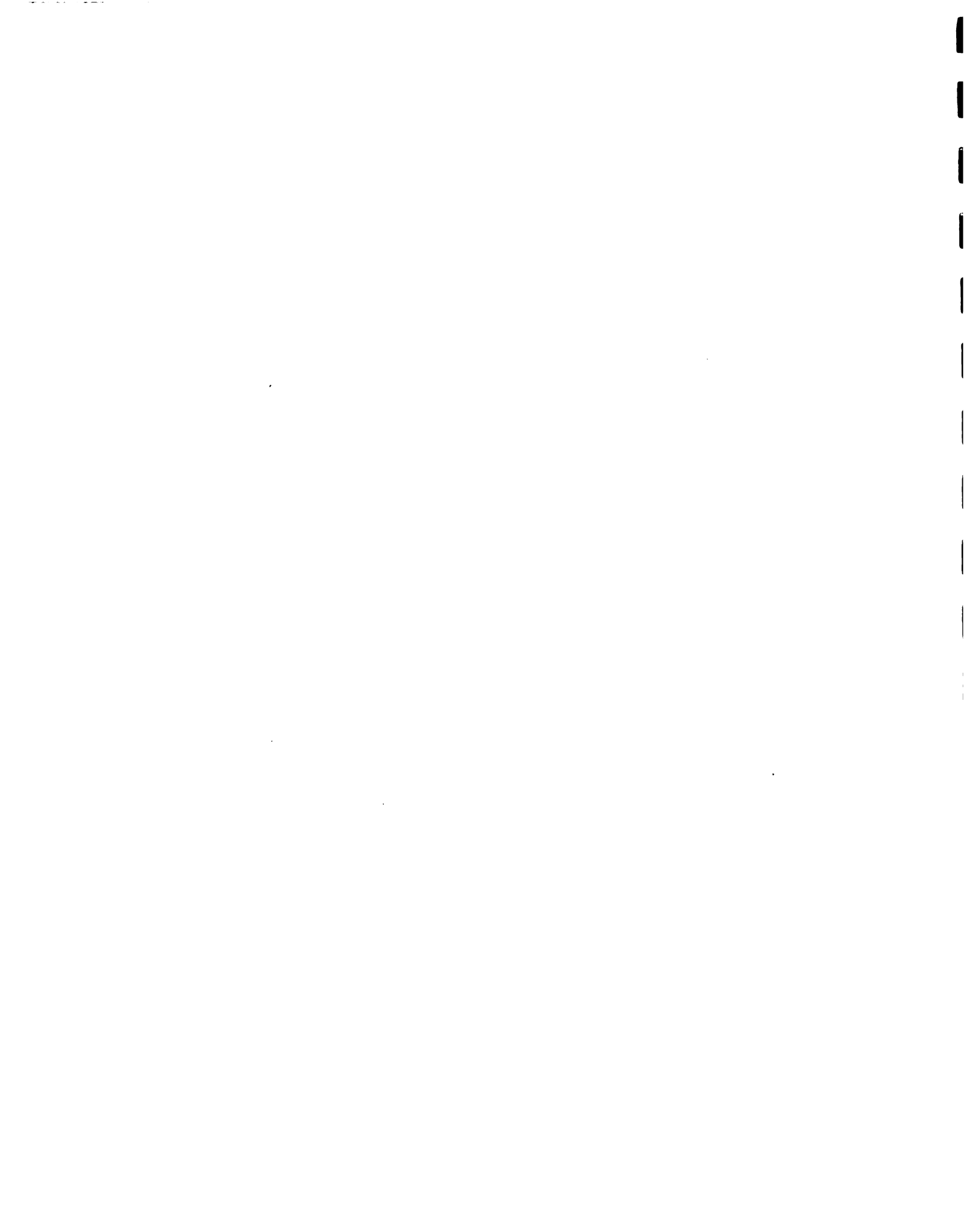
DAIRY HERD COMPOSITION FOR FARMS MODEL 'C' OF 12.5 HA SIZE
 IN SURINAME, PARA AND SARAMACCA DISTRICTS*

IV.1.4(i)

ANIMAL CATEGORIES	SURINAME			PARA			SARAMACCA			GRAN TOTAL		
	TOTAL AVERAGE	A.U	TOTAL AVERAGE	A.U	TOTAL AVERAGE	A.U	TOTAL AVERAGE	A.U	TOTAL AVERAGE	A.U	TOTAL AVERAGE	A.U
Number of farms	7.00		3.00		7.00		7.00		17.00			
Bulls	20.00	2.90	30.00	3.00	1.00	4.50	9.00	1.30	13.50	32.00	1.90	48.00
Cows on Milk	25.00	3.60	25.00	17.00	5.60	17.00	14.00	2.00	14.00	56.00	3.30	56.00
Dry cows	63.00	9.00	63.00	8.00	2.70	8.00	34.00	4.90	34.00	105.00	6.20	105.00
Total Cows	88.00	12.60	88.00	25.00	8.30	25.00	48.00	6.90	48.00	161.00	9.50	161.00
Heifers												
2-3 years old	13.00	1.90	9.75	3.00	1.00	2.25	12.00	1.70	9.00	28.00	1.60	21.00
1-2 years old	22.00	3.10	4.40	4.00	1.30	2.00	2.00	0.30	1.00	28.00	1.60	14.00
Calves 0+9 mos.	30.00	4.30	7.50	3.00	1.00	0.75	13.00	1.90	6.50	46.00	2.70	23.00
TOTAL	173.00	24.80	139.65	38.00	12.60	34.50	84.00	12.10	78.00	295.00	17.30	267.00
ANIMAL UNITS**												

* Source: 1984 FORD/MUNDZ. Suriname, Para and Saramacca Districts Dairy Farms Survey

** Adjusted from tables



TECHNICAL COEFFICIENTS USED IN THE FARM MODELS
 FARM MODEL C-12.5 HA FARM SIZE GRAZING SYSTEM

IV.1.4(ii)

COEFFICIENTS*

	YEARS										
	0	1	2	3	4	5	6	7	8	9	10
Total Pasture land (ha)	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Improved pasture land	2.4	5.5	8.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Stocking rate (au/ha)	1.3	1.2	1.8	2.1	3.0	3.4	3.8	4.0	4.1	4.0	4.0
Farm Stocking rate (au)	16.0	14.4	21.6	25.2	36.0	40.8	45.6	48.0	49.2	48.0	48.0
Gross calving rate (%)	60.0	60.0	65.0	65.0	70.0	75.0	75.0	75.0	75.0	75.0	75.0
Calf mortality (%)	20.0	20.0	15.0	10.0	8.0	8.0	7.0	7.0	6.0	5.0	5.0
Net calving rate (%)	48.0	48.0	56.0	59.0	64.0	69.0	70.0	70.0	71.0	71.0	71.0
Adult mortality (%)	10.0	7.0	5.0	5.0	3.0	2.0	2.0	2.0	2.0	2.0	2.0
Culling rate (%)											
Cows											
Bulls											
Heifers											
Calves											
Bull/Cow rate (%)	20.0										
Milk prod./cow on milking	4.0	5.0	6.0	6.0	7.0	7.0	8.0	8.0	8.0	8.0	8.0
Lactation length	180.0	190.0	200.0	210.0	240.0	260.0	270.0	275.0	285.0	285.0	290.0
Herd extraction rate											
Milk prod./ha/yr/(L)	360.0	570.0	1170.0	1365.0	2744.0	3413.0	4320.0	4400.0	4703.0	4560.0	4640.0

* Source: from 1984 Ford/Munoz Para, Saramacca and Suriname Dairy Farm Survey and adjusted by IICA - M of A 1987 Dairy Farm Survey and LVV census 1984, 1985 and 1986.



DAIRY HERD PROJECTION
 FARM MODEL C.12.5 HA FARM SIZE GRAZING SYSTEM

IV.1.4(iii)

ANIMALS CATEGORIES	YEARS										
	0	1	2	3	4	5	6	7	8	9	10
1. Breeding Cows + Heifers transferred + Heifers purchased	10	10	12	18	20	28	30	32	32	33	32
- Deaths											1
- Culled						2	3	9	9	11	11
Total cows in production	10	12	18	20	28	30	32	32	32	32	32
2. Calves born:	3	7	12	13	20	22	24	24	25	24	24
- Deaths		1	2	1	2	2	2	2	2	2	2
- Culled		3	5	6	9	10	11	11	12	11	11
Total (net) calves	3	3	5	6	9	10	11	11	11	11	11
3. Heifers 12-24 mos old	2	3	3	5	6	9	10	11	11	11	11
- Deaths		1		1							
- Culled											
Total (net)	2	2	3	4	6	9	10	11	11	11	11
4. Heifers 24-36 mos old	2	2	2	3	4	6	9	10	11	11	11
- Deaths											
- Culled											
Total (net)	2	2	2	3	4	6	9	10	11	11	11
5. Steers purchased											
- Deaths											
- Sold											
Total (net)											
6. Bulls purchased											
- Deaths											
- Culled											
Total Bulls on service	2	2	2	3	4	5	9	10	11	11	11
7. Total numbers of animals	19	19	28	33	47	54	62	64	66	65	65
8. Total animal unit	16.25	15.25	22.25	25.75	36.25	40.75	46.0	47.75	49.5	48.5	48.5



FARM MODEL C
ESTIMATED INVESTMENTS

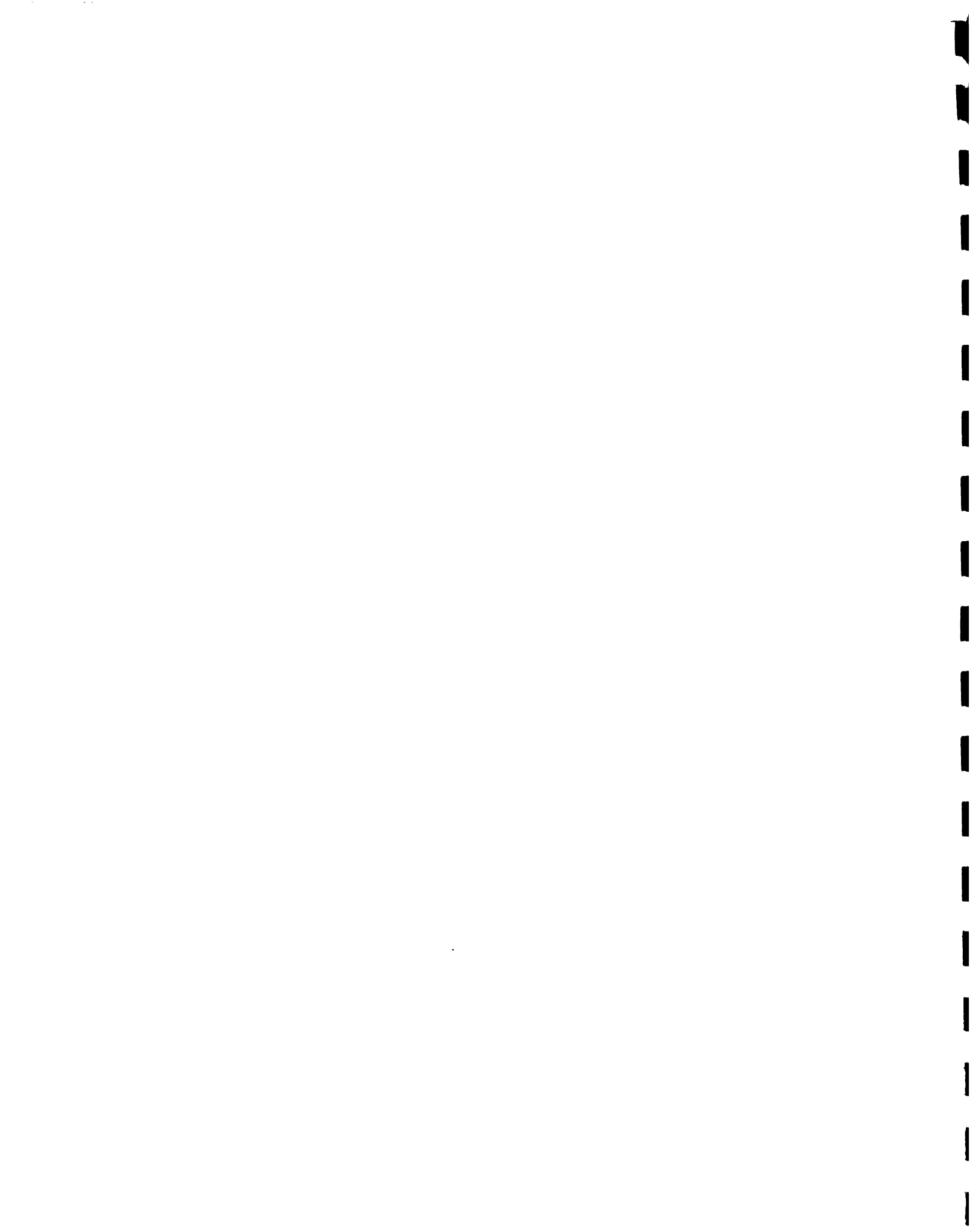
IV.1.4(iv)

CONCEPT	1	2	3	4	5	6	7	8	9	10
1. Planting grass										
-cutting grass	100	2500	4000							
-pasture	2100									
2. Production infrastruct.										
-external fence	1100	1100	1100							
-internal fence	4687					780				
-water pump & instalat.	6000	6300		6300						
-cow & calf pens										
milk and store room	4500									
-milking parlour	1500	1500	1500	1500						
-internal drainagé										
3. Equipment										
-chopping machine	1800	2180	2180	2180	2180	425	2180			2180
-milking machine	425									
-solar or elect. fence										
-working tool & mechanical kit	350						700			
-spray pump	700						240			
-buckets	240		240	240	240				240	
-carry wheel	600					600				
4. Animals										
-breeding cows		17500		17500						
-heifers 2-3 yrs.										
-heifers 1-2 yrs.										
-calves < 1yr.										
-bulls										
5. Sub-total	24102	31080	6840	25300	2420	1805	3120	0	240	2180
6. Contingencies	2410.2	3108	684	2530	242	180.5	312	0	24	218
7. Grand total	26512.2	34188	7524	27830	2662	1985.5	3432	0	264	2398



FARM MODEL C. 12.5 HA FARM SIZE GRAZING SYSTEM
 APPENDIX OF CAPITAL COSTS

Note	Assumptions and Specifications
1. Grazing pasture established in 3 years	* Water pump & Installations include
2. Internal fence established in 3 years	1. Waterpump
3. Replacemen chopping and milking machine, solar fence spray pump and carry wheel every 5 year	2. Installation water supply system
4. Tractor, plough, harrow should be borrowed from cooperative organizations or government	3. Installation of waterpump & water supply system
5. Replacement of waterpump, the price included installation	4. 6 meter deep well + installation
6. Pasture for cutting mainly for silage	** Cow & Calf pens, milk room, store room = 117
7. Replacement of buckets every second year M2 cow pens
 M2 Calf pens
 M2 Milk room
 M2 Store room



OPERATIVE COSTS PROJECTION
FARM MODEL C.12.5 HA FARM SIZE GRAZING SYSTEM *

IV.1.4(vi)

COST CATEGORIES	UNIT	NO. OF UNITS	COST UNIT	YEARS										TOTAL			
				0	1	2	3	4	5	6	7	8	9		10		
1. Man power																	
- Permanent	Day	365	20					7300	7300	7300	7300	7300	7300	7300	7300	7300	51100
- Occasional	Day	180	20	3600	3600	3600											10800
- Family Labour*	Day	365	20	7300	7300	7300	7300	7300	7300	7300	7300	7300	7300	7300	7300	7300	73000
2. Production Inputs																	
- Feeds**	Kg	AU	0.45	2669	2505	3655	4229	8931	10040	15111	15686	16261	15932	15932	15932	15932	108282
- Molasses																	
- Minerals & Drugs***	Pk/yr	AN	20	380	380	560	660	940	1080	1240	1280	1320	1300	1300	1300	1300	10060
- Deterg. & Clean.																	
- Mat. & Milking Mat.	Cow	/year	10	100	120	180	200	280	300	320	320	330	330	330	330	320	2700
- Electricity	/year	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	6000
- Fuels & Transportation***	/year	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600	26000
3. Breeding Service																	
- Bull service																	
- Artificial Insemin.	Dosis	2/cow	10	240	360	420	640	700	820	840	840	880	860	860	860	860	6620
4. Pasture Mainten.																	
- Cleaning																	
- Fertilizer	4bha	100	240	550	800	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	10950
- Drainage	M	700	3	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	21000
5. Equipment Maint.																	
- Chopping Mach.	1	5%	1800	90	90	90	90	90	90	90	90	90	90	90	90	90	630
- Milking Mach.	2	5%	2180	218	218	218	218	218	218	218	218	218	218	218	218	218	1526
- Waterpump & Inst.	1	5%	4687	234	234	234	234	234	234	203	234	234	234	234	234	234	2075
6. Building & Fences																	
- Milking parlour	1	5%	4500	225	225	225	225	225	225	225	225	225	225	225	225	225	2025
- Cows & Calves pens	1	5%	18600	500	930	930	930	930	930	930	930	930	930	930	930	930	8370
- Milk- & Store room																	
- External fence	1	5%	10500	525	525	525	525	525	525	525	525	525	525	525	525	525	5250
- Internal fence	1	5%	3300	165	165	165	165	165	165	165	165	165	165	165	165	165	1485
7. Farm Prod. consumed																	
- Milk for home use	L	548	0.75	411	411	411	411	411	411	411	411	411	411	411	411	411	4110
- Milk for anim. use	300	1/calf/y	225	675	1125	1350	2025	2250	2250	2475	2475	2475	2475	2475	2475	2475	19800
8. Land rent	HA	/year	25/ha	300	300	300	300	300	300	300	300	300	300	300	300	300	3000
9. Sub-total				5800	21906	25670	27357	37014	38568	44133	44491	45464	45095	45085	45085	45085	374783
10. Contingencies 10%				580	2191	2567	2736	3701	3857	4413	4449	4546	4510	4509	4509	4509	37478
11. TOT. ANNUAL COSTS				6380	24097	28237	30093	40715	42425	48546	48940	50010	49605	49594	49594	49594	412261

* Includes Family Labour



FARM MODEL C
ESTIMATED OPERATIONAL COSTS*

IV.1.4 (vii)

CONCEPT	0	1	2	3	4	5	6	7	8	9	10
1. Labour											
-part-time											
	3600.0	3600.0	3600.0	3600.0	7300.0	7300.0	7300.0	7300.0	7300.0	7300.0	7300.0
2. Production Inputs											
-feeds	2669.0	2505.0	3655.0	4229.0	8931.0	10040.0	15111.0	15686.0	16261.0	15932.0	15932.0
-minerals and drugs	380.0	380.0	580.0	660.0	940.0	1080.0	1240.0	1280.0	1320.0	1300.0	1300.0
-veterinaries, cleaning and milking materials	100.0	120.0	180.0	200.0	280.0	300.0	320.0	320.0	330.0	330.0	320.0
-electricity	300.0	420.0	480.0	480.0	480.0	540.0	540.0	540.0	540.0	540.0	540.0
-fuels & transportation	1500.0	1920.0	1920.0	1920.0	1920.0	1920.0	2600.0	2600.0	2600.0	2600.0	2600.0
3. Breeding service											
-bull service											
-artificial insemination	240.0	360.0	360.0	420.0	640.0	700.0	820.0	840.0	880.0	860.0	860.0
4. Pasture maintenance											
-cleaning	240.0	550.0	800.0	1200.0	1200.0	1200.0	1200.0	1200.0	1200.0	1200.0	1200.0
-fertilizer	962.0	1400.0	1400.0	2100.0	2100.0	2100.0	2100.0	2100.0	2100.0	2100.0	2100.0
-drainage											
5. Equipment maintenance											
-chopping machine				90.0	90.0	90.0	90.0		90.0	90.0	90.0
-milking machine			234.0	218.0	218.0	218.0	218.0		218.0	218.0	218.0
-waterpump & installation				234.0	234.0	234.0	234.0	234.0	234.0	234.0	234.0
6. Building & fences											
-milking parlour			225.0	225.0	225.0	225.0	225.0	225.0	225.0	225.0	225.0
-cow & calves pen	500.0	930.0	930.0	930.0	930.0	930.0	930.0	930.0	930.0	930.0	930.0
milking & store room											
-external fence	525.0	525.0	525.0	525.0	525.0	525.0	525.0	525.0	525.0	525.0	525.0
-internal fence			165.0	165.0	165.0	165.0	165.0	165.0	165.0	165.0	165.0
7. Land rent	300.0	300.0	300.0	300.0	300.0	300.0	300.0	300.0	300.0	300.0	300.0
8. SUB-TOTAL	6514.0	11522.0	15334.0	17496.0	26478.0	27867.0	33918.0	34245.0	35218.0	34849.0	34839.0
9. Contingencies	651.4	1152.2	1533.4	1749.6	2647.8	2786.7	3391.8	3424.5	3521.8	3484.9	3483.9
10. GRAND TOTAL	7165.4	12674.2	16867.4	19245.6	29125.8	30653.7	37309.8	37669.5	38739.8	38333.9	38322.9

* Exclude Family Labour and Home Consumption



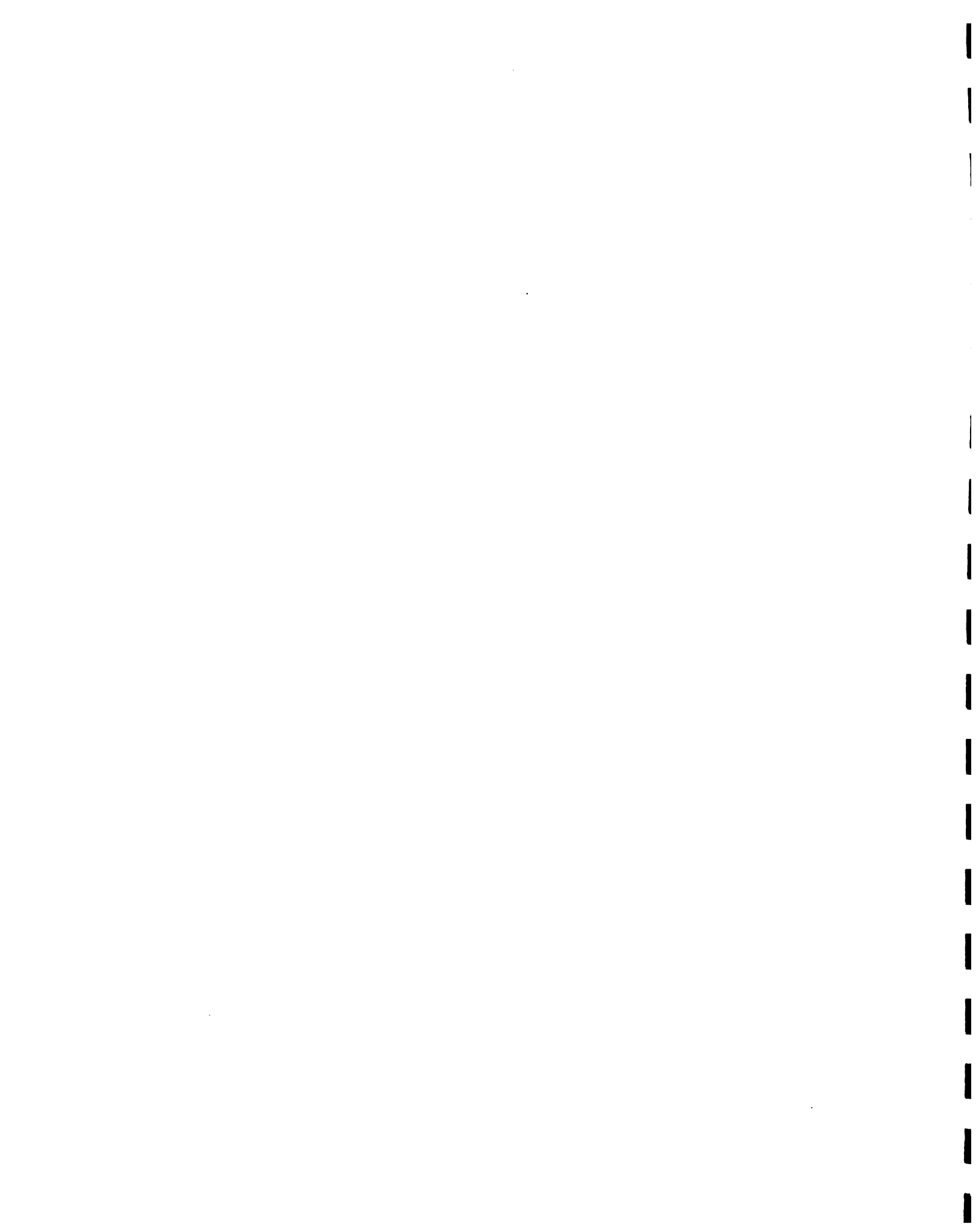
FARM MODEL C. 12.5HA FARM SIZE GRAZING SYSTEM
 APPENDIX OF OPERATIVE COSTS

Note

1. In Year 0, no AI needed, because we have bulls
2. Only 90 days supply of milk to calves
3. Building maintenance, the next year after being built
4. Maintenance of buildings and equipment is 5% of total costs

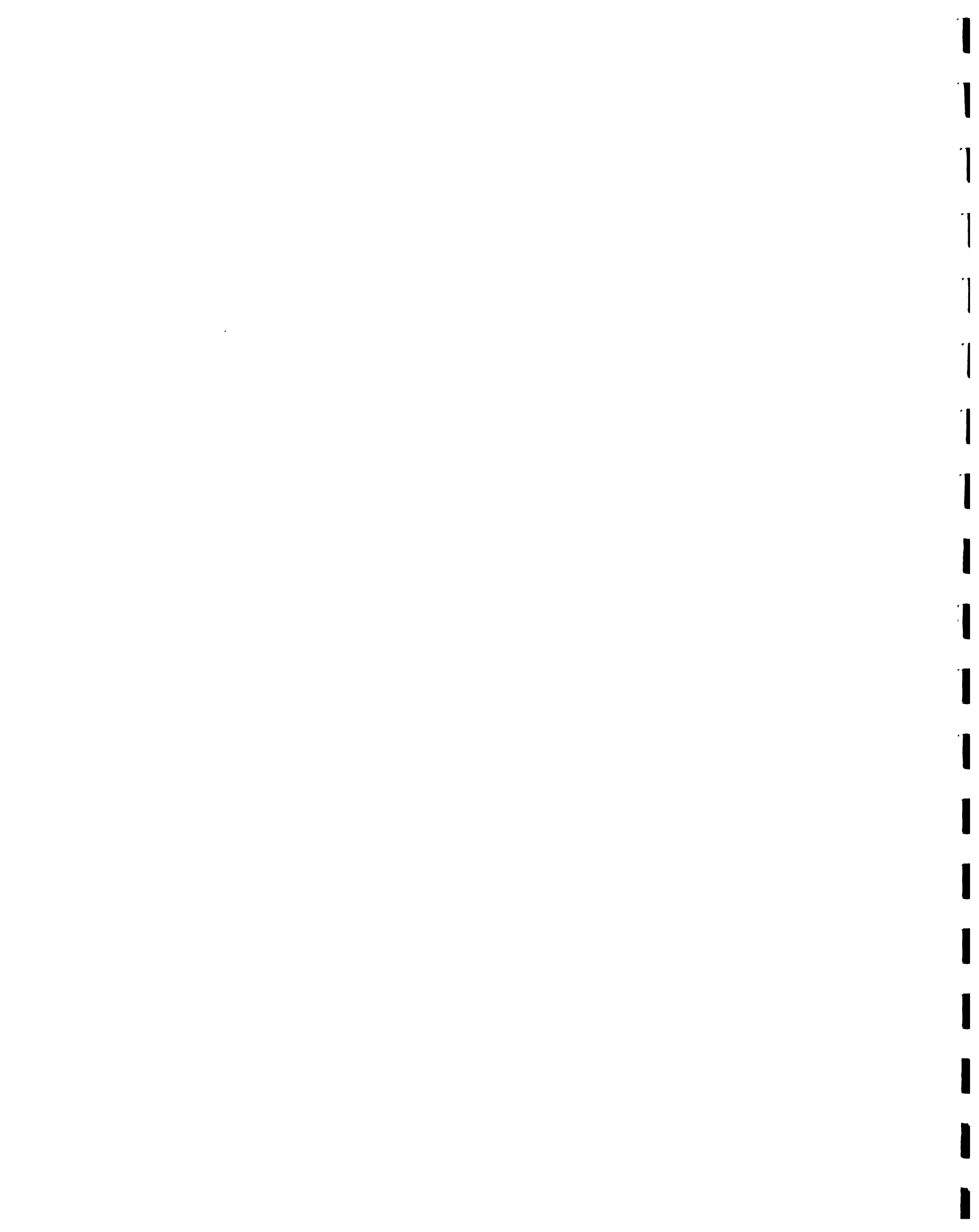
 Assumptions and Specifications

- * Assumed occasional and family labour Sf. 20,=
- ** Feeds: Year 0 - Year 3 1 kg/AU/day
 Year 4 and 5 1.5 kg/AU/day
 Year 6 - Year 10 2 kg/AU/day
- *** Package/year/animal
- **** Transportation: Car rent cost
 52 x 50 = Sf. 2600,=
- ***** Year of purchase of an equipment,
 No equipment maintenance needed
- ***** Fertilizer:
 2 bags Urea
 2 bags NPK



FARM MODEL C
ESTIMATED INCREMENTAL CASH FLOW
IV.1.4(x)

CONCEPT	0	1	2	3	4	5	6	7	8	9	10
I. SOURCES											
Total incremental		9742.0	8790.0	12045.0	27310.0	51610.0	53490.0	68910.0	73132.0	75250.0	76270.0
Total	9240.0	18982.0	18030.0	21285.0	36550.0	60850.0	62730.0	78150.0	82372.0	84490.0	84510.0
1. Sales of animals	6000.0	13852.0	7500.0	9000.0	13500.0	19900.0	23850.0	38550.0	40950.0	43450.0	43450.0
2. Sales of milk	3240.0	5130.0	10530.0	12285.0	23050.0	40950.0	38880.0	39600.0	42322.0	41040.0	41060.0
II. USES OF FUNDS											
Total incremental		32021.0	43890.0	19604.2	49790.4	26150.3	32129.9	33936.1	31574.4	31432.5	33555.5
Total	7165.4	39186.4	51055.4	26769.6	56955.8	33315.7	39295.3	41101.5	38739.8	38597.9	40720.9
1. Investments		26512.2	34188.0	7524.0	27830.0	2662.0	1985.5	3432.0	0.0	264.0	2398.0
2. Operational costs	7165.4	12674.2	16867.4	19245.6	29125.8	30653.7	37309.8	37669.5	38739.8	38333.9	38322.9
III. CASH FLOW											
		-22279.0	-35100.0	-7559.2	-22480.4	25459.7	21360.1	34973.9	41557.6	43817.5	41714.5
IRR		0.17									
NPV(8%)		41642.9									



FARM MODEL C
ESTIMATED CASH FLOW AND DEBT SERVICE

IV.1.4(xi)

CONCEPT	1	2	3	4	5	6	7	8	9	10	11
I. SOURCES											
1. Sales of animals	18982.0	18030.0	21285.0	36550.0	60850.0	62730.0	78150.0	82372.0	84490.0	84510.0	84510.0
2. Sales of milk	13852.0	7500.0	9000.0	13500.0	19900.0	23850.0	38550.0	40050.0	43450.0	43450.0	43450.0
	5130.0	10530.0	12285.0	23050.0	40850.0	38380.0	39600.0	42322.0	41040.0	41060.0	41060.0
II. USES OF FUNDS											
1. Investments	39186.4	51055.4	26769.6	56955.8	33315.7	39295.3	41101.5	38739.8	38597.9	40720.9	40720.9
2. Operational costs	26512.2	34188.0	7524.0	27830.0	2662.0	1985.5	3432.0	0.0	264.0	2398.0	2398.0
	12674.2	16867.4	19245.6	29125.8	30653.7	37309.8	37669.5	38739.8	38333.9	38322.9	38322.9
III. CASH FLOW BEFORE DEBT SERVICE	-20204.4	-33025.4	-5484.6	-20405.8	27534.3	23434.7	37048.5	43632.2	45892.1	43789.1	43789.1
IV. LOANS AND DEBT SERVICE											
1. Loans											
Principal	20300.0	35000.0	10000.0	26000.0							
	55300.0	55300.0	55300.0	91300.0	91300.0	91300.0	91300.0	91300.0	91300.0	91300.0	91300.0
2. Debt service											
-interests (8%)	0.0	1624.0	4424.0	5224.0	7304.0	7304.0	7304.0	7304.0	7304.0	7304.0	7304.0
-amortization		1624.0	4424.0	5224.0	7304.0	7304.0	7304.0	7304.0	7304.0	7304.0	7304.0
		3248.0	8848.0	10448.0	14608.0	14608.0	14608.0	14608.0	14608.0	14608.0	14608.0
V. CASH FLOW	95.6	350.6	91.4	370.2	20330.3	16130.7	14181.8	20765.5	23025.4	20922.4	20922.4

CAPITAL AND OPERATIVE COSTS SUMMARY
AND FOREIGN CURRENCY NEEDS
FARM MODEL 12.5 HA ALL FARMS IV.1.4(xii)

COST CATEGORIES	TOTAL	SFL. (000)	US\$ (000)
A. CAPITAL			
1. Pasture Establishment	1488.9	1333.7	155.2
2. External fence	1386.0	554.4	831.6
3. Internal fence	267.4	101.4	166.0
4. Water supply	618.7	112.2	506.5
5. Internal Drainage	594.0	594.0	
6. Buildings			
6.1 Cow & Calf pens	1485.0	736.6	748.4
6.2 Milking Parlour	594.0	415.8	178.2
7. Equipment			
7.1 Chopping Machine	475.2		475.2
7.2 Milking machine	1151.0		1151.0
7.3 Solar or Elect.fence	112.2		112.2
7.4 Spray pump	184.8		184.8
8. Tool			
8.1 Working tool kit +/-	92.4		92.4
8.2 Mechanics tool kit			
9. Animals			
9.1 Breeding Cows			
9.2 Heifers 2-3 yrs.	4620.0		4620.0
9.3 Heifers 1-2 yrs			
9.4 Calves less a yr			
9.5 Bulls			
10. Carry Wheel & Buckets	316.8		316.8
B. OPERATIVE COSTS			
1. Personnel	17806.8	17806.8	
2. Feed Supplement	14293.2	14293.2	
3. Veterinary inputs	1684.3		1684.3
4. Electricity	792.0	792.0	
5. Fuels & Transportation	3432.0	3432.0	
6. Breeding Service	873.8		873.8
7. Maintenance			
7.1 Pastures	4217.4	4217.4	
7.2 Equipment	558.5	558.5	
7.3 Building & Fences	2261.2	2261.2	
8. Milk for home&Animal use	3156.1	3156.1	
9. Land rent	396.0	396.0	
TOTAL	62857.7	50761.3	12096.4

Annex 4: Summary of Input and Output Data

Item	Unit	Value	Value
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ANNEXES TO CHAPTER IV
THE PROJECT

FARM INPUTS AND COSTS

IV.2

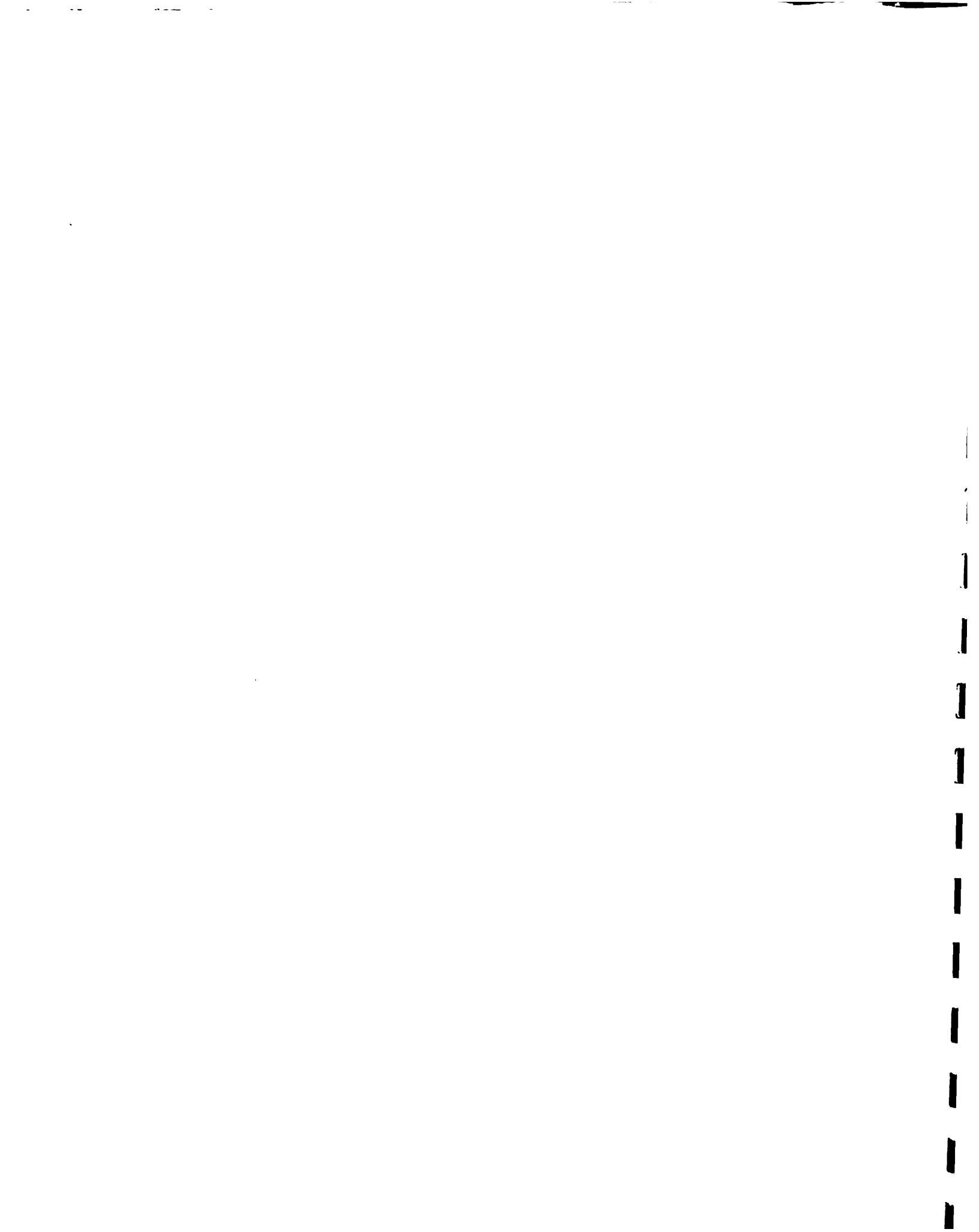
1945
1946
1947
1948

COSTS OF PRODUCTION INPUTS AND BUILDING MATERIALS

OCTOBER 1987

IV.2.1(i)

ITEMS	COSTS	
	SF.	US\$ *
FEEDS/KG:		
- Rice Bran	0.45	0.25
- Wheat Bran	0.45	0.25
Oil Palm Cake	0.27	0.15
- Molasses/liter	1.00	0.56
- Culled Banana/ton	35.00	19.44
COMMERCIAL FEES/KG:		
- Feed Lactating cows	0.65	0.36
- Calf feed	0.65	0.36
- Broiler feed	0.65	0.36
- Hog feed	0.65	0.36
DRUGS		
For internal Parasites:		
- Tramisol tablets/250 kg] l.w.	20.00	11.00
- Tramisol tablets/20 kg l.w.	5.00	2.78
- Tramisol injectable 500 ml - 2 cc/50 kg	175.00	98.00
For External Parasites:		
- Supona 100 ml/7.5/250 kg l.w.	7.50	4.20
- Ivomex 50 ml/5cc/250 kg l.w.	125.00	70.00



IV.2.1(ii)

GENERAL USE:		
- Mastitis Injector	17.50	9.75
- Dry Cows Injector	17.50	9.75
- Oxitetracycline 100 ml/1cc/ 10 kg l.w.	60.00	34.00
- Tetracycline 100 ml/1cc/ 10 kg l.w.	60.00	60.00
- Imisol 100 ml/1cc/100 kg l.w.	200.00	111.00
Calcium Magnesium gluconate 2 x 500 ml/cow	25.00	14.00
Screworm spray	12.50	7.00
MINERALS AND VITAMINS:		
Multivitamins 100 ml/5cc/calf	50.00	28.00
Salt block 10 kg	12.50	7.00
Fertilizers:		
Urea/50 kg/bag	22.00	13.00
N.P.K. 15-15-15/50 kg/bag	28.00	16.00
Herbicides:		
2.4 D-Amine/liter	7.00	4.00
Gramaxone/liter	11.00	6.00
Paraquat/liter	11.00	6.00
Roundup/liter	60.00	34.00

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IV.2.1(iii)

INFRASTRUCTURAL INPUTS:		
Barbed wire 500 mtr/roll	440.00	245.00
Wire for Electrical Fence # 16 wire 78 mtr/kg 50kg/roll	1,500.00	835.00
Nails/kg	4.00	2.22
Posts (Wallaba)		
Size A 4" x 4" x 110"	3.50	2.00
Size B 2" x 2" x 110"	1.80	1.00
Bamboo 110"	0.50	
Cement 50 kg/bag	15.50	8.60
Sand/M3	20.00	11.00
Rock Material/M3	300.00	166.00
Timber/mtr		
4" x 4"	8.33	4.63
2" x 4"	4.40	2.44
1" x 6"	3.28	1.82
1 1/2" x 6"	4.82	2.68
Corrugated Zinc Sheets 30 Gauge		
Roof Nails/kg	85.00	48.00
Rural Building costs/m2	200.00	112.00
Drainage trench cost/M on far	2.50	1.40
EQUIPMENT AND TOOLS:		
Portable milking machine one unit 10 cows/hour	1,620.00	900.00
Double units 20 cows/hour	2,180.00	1,200.00
Detergents/year	100.00	56.00
Electric Dehorner	-	45.00
Dehorning paste/25 calves	-	14.00
Animal identification tattoo	-	45.00
Medical care kit	-	45.00

IV.2.1(iv)

Tools:		
Fork	150.00	84.00
Shovel	45.00	25.00
Cutlass	35.00	20.00
Hammer	30.00	17.00
Pliers	25.00	14.00
Wire stretcher		20.00
Spade	15.00	8.50
Solar Fencer	-	200.00
Electric Fencer	-	70.00
Chopping machine	3,440.00	1,911.00
Water pump		350.00
Spray pump	350.00	195.00

* US\$ 1 = SF. 1.80

** October 1987 prices

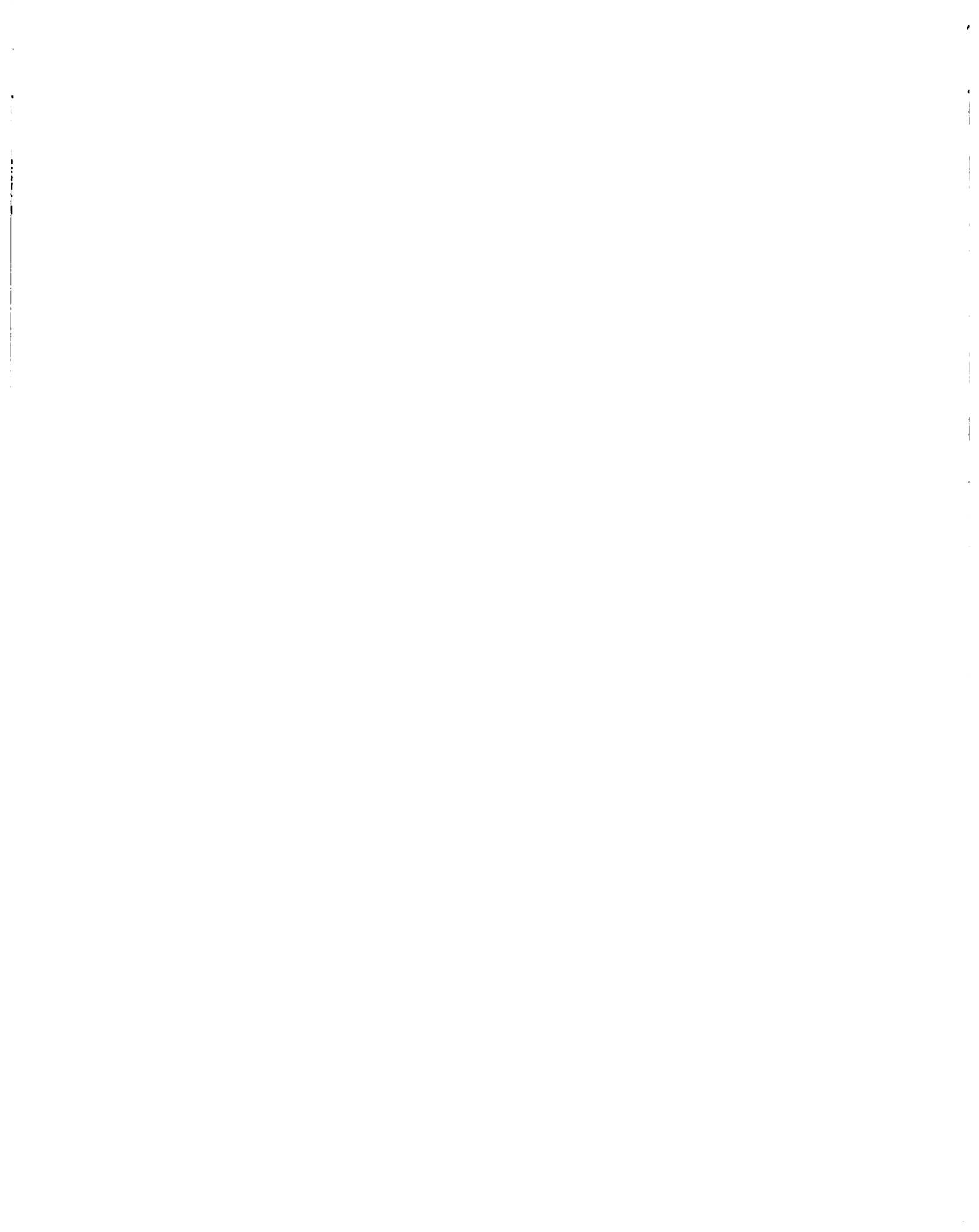
Note: 20% Added to costs of imported items to cover shipping and freight.



**CAPITAL COSTS - PASTURE ESTABLISHMENT COST PER HECTARE
BY PLANTING GRASS**

IV.2.2

STEPS	COSTS PER HECTARE			
	FARMER ESTIMATE		SEL ESTIMATE	
	SFL.	US\$	SFL.	US\$
1. LAND PREPARATION PLOUGH AND HARROW Sf. 220/400 M ²	550	306	90	50
2. ESTABLISHMENT GRASS MATERIAL & PLANTING	50	28	270	150
3. FERTILIZER 2 bag Urea Sf. 280/bag	64	36	68	38
4. WEED CONTROL 8 l 24D Sf. 5,0/ltr 1 man Sf. 30/day	70	39	180	100
TOTAL	734	409	608	338



CAPITAL COSTS - PASTURE ESTABLISHMENT BY SEEDING*

IV.2.3

	COSTS	
	SFL.	US\$.
1. LAND PREPARATION CLEANING AND WEEDING 2 man/ha Sf. 30/day + 8 L of 24D Sf. 8./1	100	56
2. PLANTING AND SEEDS 30 k seed/ha Sf. 90. 1/5 day manpower Sf. 30.	96	53
3. FERTILIZER 2 bags urea/ha Sf. 28/bag	56	31
4. WEED CONTROL 8 l 2-4D Sf. 5./1 1 man/ha Sf. 30/day	70	39
TOTAL	322	179

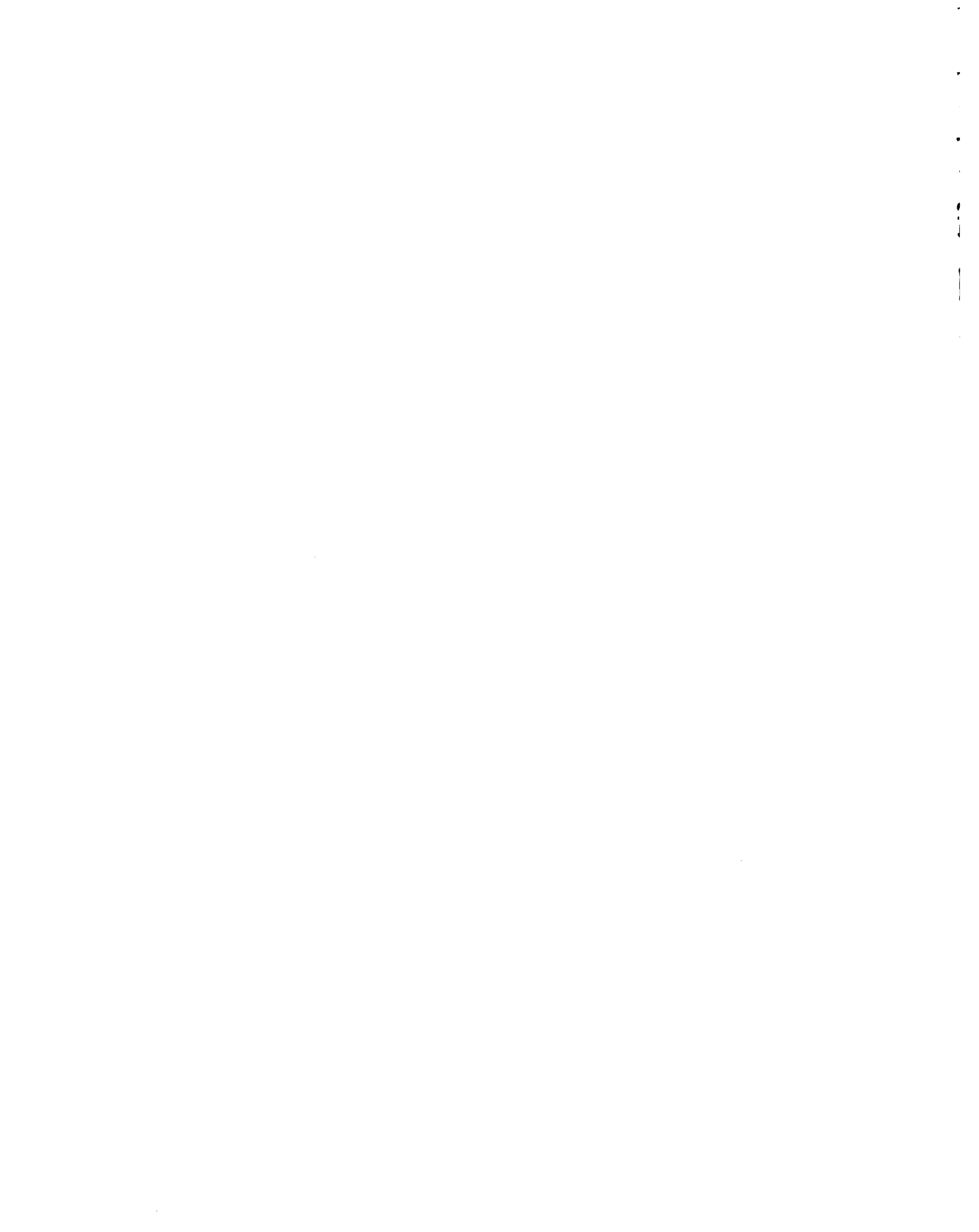
*SOURCE: ESTIMATION MADE BY FARMERS



CAPITAL COSTS - ELECTRIC FENCE

IV.2.4

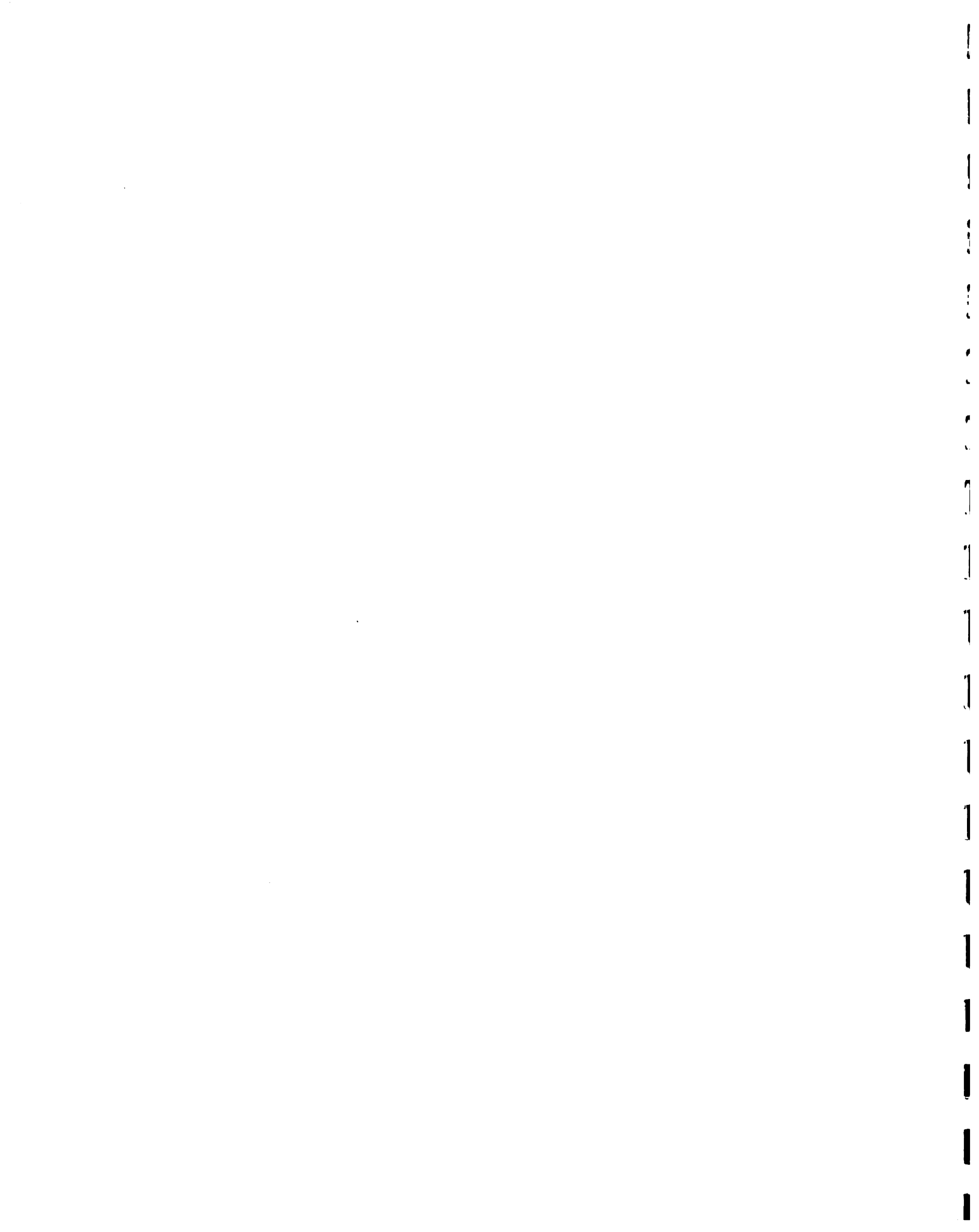
ITEMS (per 1000 M)		COSTS	
		SFL.	US\$.
1.	Wire 1000 m galvanized # 16 wire 78 m/kg Sf. 300/kg	385	214
2.	20 post 4' x 4' x 70' Sf. 3.50/post	70	39
3.	40 sticks 2' x 2' x 60' Sf. 1.0/post	60	33
4.	Insulators & nails 2 pvc 3/4' pipe Sf. 16/pipe 1 lb 1½' nails Sf. 1.6/lb	34	19
5.	Solar powered electric fencer	425	236
6.	Installation 3 men Sf.30./day	90	50
TOTAL COST/1000 M		1,064	591
COST/M		1.1	0.59



CAPITAL COSTS - BARBEDWIRE FENCE

IV.2.5

ITEMS		COSTS	
		SFL.	US\$
1.	Wire 10 roll # 12 barbedwire: Sf. 440/roll of 500 m	4,400	2,440
2.	Posts 500 post 6' x 6' x 110' Sf. 3.50/post	1,750	970
3.	Nails (or staples) 20 kg of 2' nail Sf. 5,00/kg	100	56
4.	Construction 40 men Sf. 30/day	1,200	667
	TOTAL COST/1000 M	7,450	4,133
	COST/M	7.5	4.2



PRICES FOR BREEDING STOCK AND SLAUGHTER
ANIMALS OCTOBER 1987

IV.2.6

CATEGORIES	COSTS			
	CULLS	BREEDING STOCK	SFL.	US\$*
1 Mature Cow				
350 kg live weight				
Sf. 14/kg carcass.				
US\$ 7.79/kg carcass.	2450	1361	4410	2450
2 Heifers				
3+ years - 275 kg	1925	1069	3465	1925
2-3 years - 225 kg	1575	875	2835	1575
1 year - 150 kg	1050	583	1890	1050
Sf. 14/kg carcass.				
US\$ 7.79 kg carcass.				
3 Calves - 100 kg	2500	1390	2500	1390
Calves 1 week old	1500	833	1500	833
Sf. 14/kg carcass.				
US\$ 7.79/kg carcass.				
4 Bulls				
3+ yrs. (500 kg)	4676	2597	8415	4675
2 yrs. (300 kg)	2805	1558	5049	2805
1 yr. (200 kg)	1870	1039	3366	1870
Sf. 17/kg carcass.				
US\$ 9.45/kg carcass.				

* Breeding stock =
Carcass price + 80% for Mature Cows, Bulls + Heifers

** Official rate of exchange US\$1 = SFL. 1.80



IMPROVED PASTURE PER FARM SIZE (HA) IV.2.7

YEAR	1.5 HA	4. HA	12. HA	TOTAL
1	28	85.8	49.6	163.4
2	45.6	196.8	136.1	378.5
3	48	312.6	259.3	619.9
4	48	345.6	299.6	693.2
5	28	334.6	282.1	644.7
6	4	216.8	156.5	377.3
7		107.8	84	191.8
TOTAL	201.6	1600	1267.2	3068.8



FERTILIZER REQUIREMENTS

YEAR	TOTAL HECTARES			ALL FARMS	IV.2.8	
	1.5 HA	4.5 HA	12.0 HA		FERTILIZER 200 KG/HA	FERTILIZER (TONNES)
1	36.0	148.2	88.0	272.6	54,520.0	55.5
2	94.0	431.4	298.5	823.9	164,780.0	164.8
3	154.0	830.4	649.0	1,633.4	326,680.0	326.7
4	214.0	1,262.4	1,011.0	2,487.4	497,480.0	497.5
5	248.0	1,675.4	1,343.5	3,266.9	653,380.0	653.4
6	252.0	1,892.2	1,500.0	3,644.2	728,840.0	728.8
7	252.0	2,000.0	1,584.0	3,836.0	767,200.0	767.2
8	252.0	2,000.0	1,584.0	3,836.0	767,200.0	767.2
9	252.0	2,000.0	1,584.0	3,836.0	767,200.0	767.2
10	252.0	2,000.0	1,584.0	3,836.0	767,200.0	767.2
TOTAL	2,006.0	14,240.0	11,226.0	27,472.4	5,494,480.0	5,495.5



Expansion of Dairy Herds
on Participating Farms
(Nos of Animals and Animal Units)

IV.2.9

YEAR	1.5 HA	4.5 HA	12.5 HA	TOT. AU
1	168	1326	304	1798
2	548	3396	1037	4981
3	1072	5712	2118	8902
4	1688	7854	3333	12875
5	2292	9892	4702	16886
6	2740	10372	5898	19010
7	3012	10490	6913	20415
8	3200	10412	7787	21399
9	3300	10608	8264	22172
10	3320	10520	8529	22369

**REQUIREMENTS OF RICEBRAN FOR FARM IN THE PROJECT
5 YEARS IMPLEMENTATION**

IV.2.10

YEAR	1.5 HA	4.0 HA	12.0 HA	TOTAL A.U.	RICE BRAN 2 KG/AU/DAY
1	140.00	1,014.00	244.00	1,398.00	1,020,540.00
2	424.00	2,613.00	828.75	3,865.75	2,821,997.50
3	786.00	4,443.00	1,681.25	6,910.25	5,044,482.50
4	1,229.00	6,157.50	2,620.25	10,006.75	7,304,927.50
5	1,655.00	7,733.00	3,653.00	13,041.00	9,519,930.00
6	1,973.00	8,090.50	4,521.50	14,585.00	10,647,050.00
7	2,206.00	8,186.00	5,237.25	15,629.25	11,409,352.00
8	2,368.00	8,100.50	5,860.00	16,328.50	11,919,805.00
9	2,448.00	8,208.50	6,189.75	16,846.25	12,297,762.00
10	2,461.00	8,169.50	6,368.75	16,999.25	12,409,452.00

Y1 =	1,021 TON
Y2 =	2,822 TON
Y3 =	5,044 TON
Y4 =	7,305 TON
Y5 =	9,520 TON
Y6 =	10,647 TON
Y7 =	11,409 TON
Y8 =	11,920 TON
Y9 =	12,298 TON
Y10 =	12,409 TON



No. of Breeding Heifers to be imported
for Participating Farms

IV.2.11

	4.5 HA	1.5 HA	12.5 HA			
YO	X	500 Y1 X	168 Y2 X	132 Y4 X	132	
COWS	9	4500				
HEIFERS 2-3	1	500 2	336 5	660 5	660	
HEIFERS 1-2	1	500				
CALVES	3	1500				
BULLS	2	1000				

8000 336 660 660

TOTAL IMPORT OF ANIMALS
1.5 HA MODEL Y1 - 336 ANIMALS
12 HA MODEL

Y2 - 660 ANIMALS
Y4 - 660 ANIMALS

1656

*



Nos. of Artificial Inseminations Required
for each Farm Size Category

IV.2.12

YEAR	1.5 HA	4.5 HA	12.5 HA	TOTAL
1	112	780	192	1084
2	356	1938	660	2954
3	636	3282	1334	5252
4	944	4608	2064	7616
5	1212	5804	2828	9844
6	1380	6010	3404	10794
7	1500	6098	3792	11390
8	1600	6000	4104	11704
9	1660	6000	4213	11873
10	1680	6000	4262	11942



DAIRY PRODUCTION PROJECT
 TOTAL OF FARM CAPITAL COSTS ALL FARMS
 AMOUNT REQUIRED BY YEAR OF PROJECT
 AND SIZE GROUPS (SFL.000)

IV.2.13

YEAR	1.5 HA	4.5 HA	12.5 HA	TOTAL
1	433	753.5	601.6	1788.1
2	1216	1751.1	1767.1	4734.2
3	1475.8	2548.5	2720.8	6745.1
4	1477.4	2750.4	3070.3	7298.1
5	1171.8	2664.1	2921.8	6757.7
6	481.4	1789.9	2093.8	4365.1
7	130	1059.2	1086.2	2275.4
8	152.7	600.1	857.6	1610.4
9	153.7	661.8	325	1140.5
10	121.2	632.5	228	981.7
				37696.3

DAIRY PRODUCTION PROJECT
 TOTAL OF FARM OPERATIVE COSTS ALL FARMS
 AMOUNT REQUIRED BY YEAR OF PROJECT
 AND SIZE GROUPS (SFL.000)

IV.2.14

YEAR	1.5 HA	4.5 HA	12.5 HA	TOTAL
1	240100	1205568	385552	1831220
2	618772	2951646	1198799	4769217
3	1056888	4839438	2272521	8168847
4	1557832	6793380	3283851	11635063
5	1930536	8692560	4324698	14947794
6	2162656	9184082	5014476	16361214
7	2346320	9614134	5590659	17551113
8	2475004	9856590	6120113	18451707
9	2560304	10123636	6356831	19040771
10	2592824	10190824	6523545	19307193
TOTAL	17541236	73451858	41071045	132064139



ANNEXES TO
CHAPTER IV
THE PROJECT

FARM CREDIT SUMMARY

IV.3

THE UNIVERSITY OF
MICHIGAN LIBRARY
ANN ARBOR, MICHIGAN
48106-1000

CONSOLIDATED LOANS REQUIREMENTS AND REPAYMENTS
('000 sf)

IV.3.1

CONCEPT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	TOTAL
I. MODEL A															
1. number of farms	25	40	40	40	20										165
2. accumulated loan req.	162.5	710	1005	1020	890	400	20								4207.5
3. accumulated repayment		12.5	70	150	240	426	632	808	976	1056	896	640	384	128	6418.5
II. MODEL B															
1. number of farms	78	108	108	108	98										500
2. accumulated loan req.	0	663	1167.6	1263.6	1263.6	1178.6	313.6								5850
3. accumulated repayment			54.6	145.8	243	496.2	802.4	1038	1254	1450	1223.8	910.6	597.4	284.2	8500
III. MODEL C															
1. number of farms	16	31	35	26	21										129
2. accumulated loan req.	324.8	1189.3	1955.5	2478.8	2492.3	1905	886	546							11777.7
3. accumulated repayment		25.6	120	275.6	473.6	922.7	1559.4	2176.8	2626.5	2954.1	2587.7	1677.8	1076.3	480.9	17157
IV. TOTAL LOAN REQUIREMENTS	487.3	2562.3	4128.1	4762.4	4645.9	3483.6	1219.6	546							21835.2
V. TOTAL REPAYMENTS	0	92.7	335.8	668.6	1209.8	2151.1	3229.4	4238.8	5052.5	5233.9	4707.5	3428.4	2057.7	893.1	33299.3



TOTAL FINANCING REQUIRED FOR LOAN COMPONENT

('000 sf)

IV.3.2

CONCEPT 1 2 3 4 5 6 7 8 9 10 11 12 13 14

I. MODEL A

1. number of farms	25	40	40	40	20									
2. accumulated loan req.	162.5	710	1005	1020	890	400	20							
3. accumulated repayment		12.5	70	150	240	426	632	808	976	1056	896	640	384	128

II. MODEL B

1. number of farms	78	108	108	108	98									
2. accumulated loan req.	0	663	1167.6	1263.6	1263.6	1178.6	313.6							
3. accumulated repayment			54.6	145.8	243	496.2	802.4	1038	1254	1450	1223.8	910.6	597.4	284.2

III. MODEL C

1. number of farms	16	31	35	26	21									
2. accumulated loan req.	324.8	1189.3	1955.5	2478.8	2492.3	1905	886	546						
3. accumulated repayment		25.6	120	275.6	473.6	922.7	1559.4	2176.8	2626.5	2954.1	2587.7	1877.8	1076.3	480.9

IV. TOTAL LOAN REQUIREMENTS 487.3 2562.3 4128.1 4762.4 4645.9 3483.6 1219.6 546

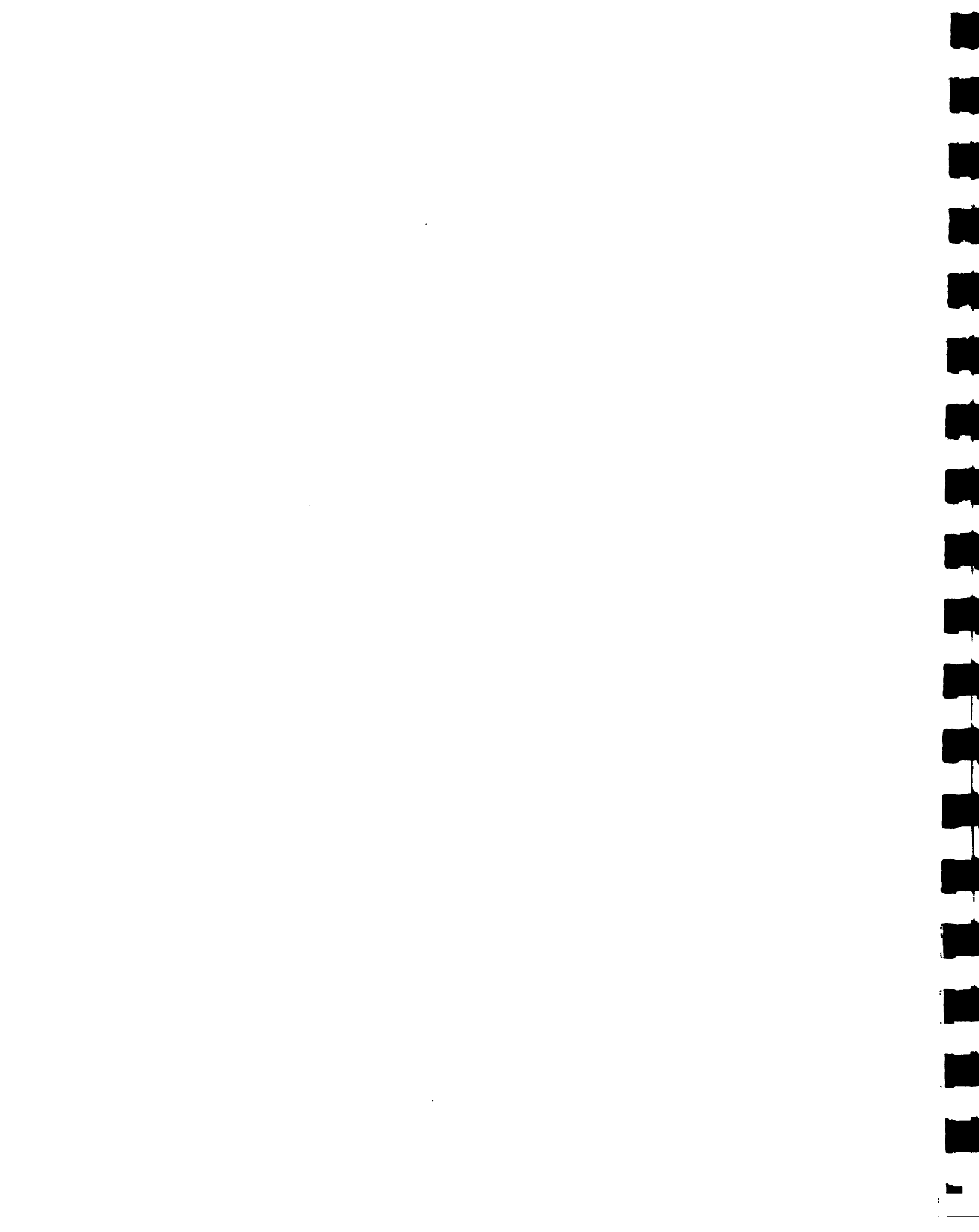
V. TOTAL REPAYMENTS 0 92.7 335.8 668.6 1209.8 2151.1 3229.4 4238.8 5052.5 5233.9 4707.5 3428.4 2057.7 893.1

VI. FINANCING NEEDED 487.3 2956.9 6749.2 10843.0 14279.1 15811.6 13601.8 9909.0



Summary of Loans and Repayment schedule
For each Farm Size Category

	IV.3.3										
concept	1	2	3	4	5	6	7	8	9	10	11 TOTAL
loans per farm (model A)	6.5	18.0	1.0								25.5
repayments per farm (A)	0.5	2.0	2.0	2.0	2.4	6.4	6.4	6.4	6.4	6.4	6.4
loans per farm (model B)		8.5	3.2								11.7
repayments per farm (B)		0.7	0.9	0.9	0.9	2.9	2.9	2.9	2.9	2.9	2.9
loans per farm (model C)	20.3	35.0	10.0	26.0							65.3
repayments per farm (C)	1.6	4.4	5.2	5.2	7.3	7.3	22.9	22.9	22.9	22.9	22.9



SURINAME DAIRY PRODUCTION PROJECT
ESTIMATE OF CREDIT REQUIRED IN INDIVIDUAL FARMS
(US\$000)

IV.3.4

TYPE OF FARM	BUDGET YEAR							TOTAL
	YR1	2	3	4	5	6	7	
MODEL A: 1.5 HA	7.2	11.1	1.8	0.4	0.6			21.1
MODEL B: 4.5 HA	0.8	5.1	25.0					30.9
MODEL C: 12.5 HA	10.2	210.3	5.7	15.1				241.3

SURINAME DAIRY PRODUCTION PROJECT
ESTIMATE OF INTEREST AND AMORTIZED REPAYMENTS FOR INDIVIDUAL FARMS
(US\$000)

IV.3.5

TYPE OF FARM	BUDGETED YEARS										TOTAL
	YR 2	3	4	5	6	7	8	9	10		
MODEL A: 1.5 HA											
INTEREST	0.6	1.4	1.6	1.6							5.2
AMORTIZATION					5.3	5.3	5.3	5.3	5.3	5.3	26.5
MODEL B: 4.5 HA											
INTEREST	0.1	0.5									0.6
AMORTIZATION			3.3	3.3	3.3						9.9
MODEL C: 12.5 HA											
INTEREST	0.8	2.5	3.0								6.3
AMORTIZATION				15.8	15.8	15.8	15.8				63.2



SURINAME DAIRY PRODUCTION PROJECT
 CREDIT REQUIRED MODEL A: 1.5 HA FARM
 (US\$000)

IV.3.6

YEAR ENTRY INTO NO. PROGRAM	FARMS	PROJECT IMPLEMENTATION								TOTAL	
		YR 1	2	3	4	5	6	7	8		
YEAR 1	28	202.0	310.0	49.8	10.9	17.1					589.8
2	40		288.9	442.2	71.1	24.4					826.6
3	40			288.9	442.2	71.1	24.4				826.6
4	40				288.9	442.2	71.1	24.4			826.6
5	20					144.4	221.1	35.6	12.2		413.3
TOTAL	168	202.0	598.9	780.9	813.1	699.2	316.6	60.0	12.2		3482.9

SURINAME DAIRY PRODUCTION PROJECT
 SCHEDULE OF REPAYMENTS MODEL A: 1.5 HA
 (US\$000)

IV.3.7

YEAR OF START AMORTIZED REPAYMENTS	NO. FARMS	PROJECT IMPLEMENTATION & FOLLOW-UP											TOTAL		
		YR 4	5	6	7	8	9	10	11	12	13	14			
YEAR 6	28			118.2	118.2	118.2	118.2	118.2							591.0
7	40				168.9	168.9	168.9	168.9	168.9						844.5
8	40					168.9	168.9	168.9	168.9	168.9					844.5
9	40						168.9	168.9	168.9	168.9	168.9				844.5
10	20								84.4	84.4	84.4	84.4	84.4	84.4	422.0
TOTAL	168	0	0.0	118.2	287.1	456.0	624.9	709.3	591.1	422.2	253.3	84.4			3546.5



SURINAME DAIRY PRODUCTION PROJECT
 CREDIT REQUIRED MODEL B: 4.5 HA FARM
 (US\$000)

IV.3.8

YEAR ENTRY INTO PROGRAM	NO. FARMS	PROJECT IMPLEMENTATION								TOTAL	
		YR 1	2	3	4	5	6	7	8		
YEAR 1	78	65.0	398.7	195.0							658.7
	2	108		90.0	552.0	270.0					912.0
	3	108			90.0	552.0	270.0				912.0
	4	108				90.0	552.0	270.0			912.0
	5	98					81.7	500.9	245.0		827.6
TOTAL		500	65.0	488.7	837.0	912.0	903.7	770.9	245.0		4222.3

SURINAME DAIRY PRODUCTION PROJECT
 SCHEDULE OF REPAYMENTS MODEL B: 4.5 HA
 (US\$000)

IV.3.9

YEAR OF START AMORTIZED REPAYMENTS	NO. FARMS	PROJECT IMPLEMENTATION & FOLLOW-UP											TOTAL	
		YR 4	5	6	7	8	9	10	11	12	13	14		
YEAR 4	78	221.0	221.0	221.0										663.0
	5	108		306.0	306.0	306.0								918.0
	6	108			306.0	306.0	306.0							918.0
	7	108				306.0	306.0	306.0						918.0
	8	98					277.7	277.7	277.7					833.1
TOTAL		500	221.0	527.0	833.0	918.0	889.7	583.7	277.7					4250.1





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ANNEXES
TO CHAPTER IV
THE PROJECT

TRAINING COURSE

IV.4



Design of the Training course

There is one basic design for the training course. However emphases will be put on the theoretical part for the animal production assistants while for the farmers the theory will be given in a lower key.

The practical part of the training will be the same for animal production assistants and farmers.

Basic Training Course1. Pasture Establishment and Management1.1 Theoretical Aspects

Grass species present in Suriname, local as well as imported species, production, nutritive value, environmental requirements, palatability

1.1.2 Selection of grass species for dairy cattle based on nutritive value topographical circumstances and soil type.

1.1.3 Pasture establishment methods

Land preparation and nursery

- a Forest into pasture
- b Natural grasses replaced by high quality grass
- c Changing low lands (swamps) into high quality pastures
- d Establishment of nursery
- e Cost calculations for the different methods

1.1.4 Fertilizing

- a the use of manure
- b fertilizer



- 1.1.5 Pest and disease control
- a. control of insects
 - b. selecting resistant grass species
- 1.1.6 Fencing
- Fencing system. Their advantages and disadvantages, cost calculation and comparison of:
- a. barbed wire fence
 - b. suspended fence
 - c. electrical fence
 - electricity from powerline
 - battery - powered
 - solar - powered
- 1.1.7 Grazing systems
- The objective of grazing management.
- Grazing system
- a. continuous grazing
 - b. controlled grazing
 - rotational grazing
 - strip grazing¹
 - zero grazing
 - deferred grazing
 - advantages and disadvantages
 - c. basis for the establishment of a grazing system
 - grass production
 - grazing period
 - resting period
 - daily total forage required
 - nutritive value of the grass.



1.2. Practical Training

- 1.2.1 Recognition of the native and introduced grass species in the field.
- 1.2.2 Establishment of fences in the field.
 - a. barbed wire
 - b. suspended fence
 - c. solar fence
- 1.2.3 The Establishment of a rotational grazing cycle.
- 1.2.4 Different methods of planting grass in the field.
 - by seed
 - by hand
 - scatter and harrow
 - flood planting
 - ridge and harrow planting
- 1.2.5 Establishment of a grass nursery.
- 1.2.6 Weed control.
 - by hand
 - mechanical
 - chemical

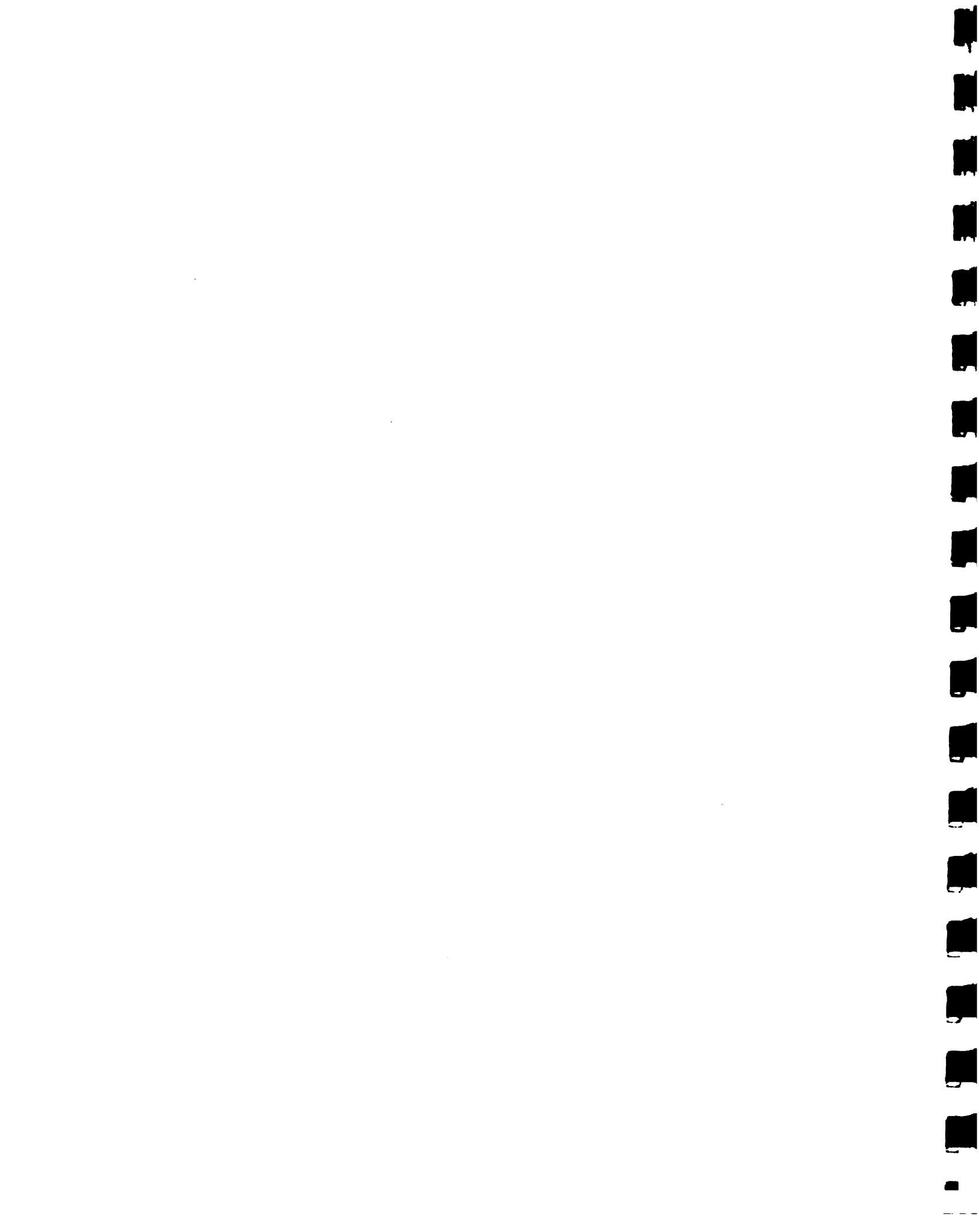
2. Forage Production and Conservation

Theoretical

- 2.1 General outline of forage conservation and its main objectives.
- 2.2 Forage conservation.
 - 2.2.1 Silage
 - respiration
 - fermentation
 - stabilization



- 2.2.2 Objectives of silage
- 2.2.3 Types of silo's
 - pit silo
 - tower silo
 - small silo's
- 2.2.4 Types of materials for making silage
 - grasses
 - legumes
 - fruits
 - others such as chicken manure, coffee pulp, etc.
- 2.2.5 Infrastructure and equipment
- 2.2.6 Preparation of silage.
- 2.2.7 Quality of silage
 - Factors affecting the quality of silage
 - size and bulkiness of materials
 - sugar content
 - moisture
 - sealing of silo
- 2.2.8 Yield of silage
- 2.2.9 Feeding of silage
- 2.2.10 Estimation of required amount of silage
- 2.2.11 Calculation of silo size
- 2.2.12 Calculation area of forage needed for silage



2.2 Practical Training

2.2.1 Building of a trench silo

2.2.2 Preparing silage

3. Herd Management.

3.1 Calf Management

3.1.1 management of new-born calves

3.1.2 calf identification

- plastic ear tags
- metal earrings
- ear tattoo
- neck collar
- body brand

3.1.3 calf dehorning

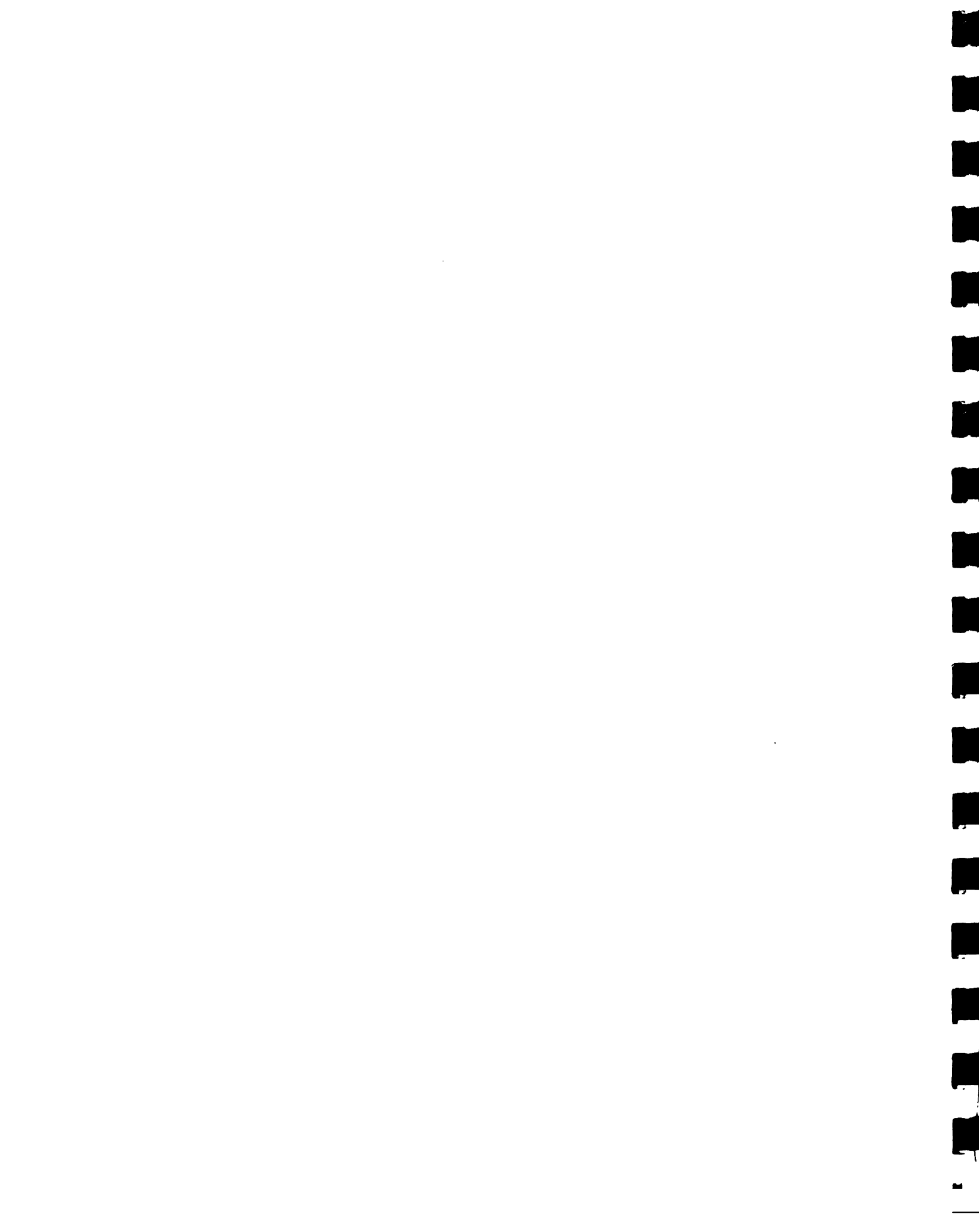
- chemical
- electrical
- dehorning scissors

3.1.4 supplementary teats

3.1.5 calves and heifers feeding systems

- supplying milk or calf starter
- stimulation of forage consumption
- minerals and salt
- supply of fresh water
- sanitation

3.1.6 cattle handling for treatment purposes.



- 3.2 Milking
 - 3.2.1 Milking system
 - by hand
 - mechanical
 - 3.2.2 Daily routine in the milking herd
 - 3.2.3 General maintenance of milking machine
- 4. Genetic Improvement of the Dairy Herd
 - 4.1 General concepts
 - 4.2 Production and productivity of milk cattle in the topics
 - 4.2.1 - parameters
 - cattle breed performance
 - 4.3 Improving the dairy cattle genetic potential
 - 4.3.1 selection
 - 4.3.2 crossbreeding²
 - 4.3.2.1 crossbreeding systems
 - absorbent cross
 - alternate cross
 - rotational cross
 - 4.4 Milk production from different breeds.



5. Nutrition of the Dairy herd

5.1 Nutrients

- water
- energy
- protein
- minerals
- vitamins

5.2 Nutritional requirements

- maintenance
- production
- growth
- gestation
- weight gains

5.3 Sources of nutrients for animal feeding systems

- grasses
- silage
- concentrates

5.4 Formulating feed mixtures

5.4.1 Feed selection criteria

- availability of feed
- nutritive value of feed
- costs of feed

5.4.2 Methods of formulating feed mixtures

- the pearson square

5.4.3 Formulating a complete mix for crude protein and total digestible nutrients

- formulating for crude protein
- formulating for total digestible nutrients



6. Herd Health**6.1 Infectious diseases**

- herd tests and isolation strategy

6.2 Fertility examinations and test schedule

- individual cow cards
- examination and report formats
- breeding soundness evaluations
for artificial insemination
- infectious genital disease tests

6.3 External parasite control

- estimate of infestation
- insecticide application methods and schedule

6.4 Mastitis control

- evaluation of milking techniques
and sanitary practices
- bulk sampling
- California mastitis test
- clinical case sampling treatment and control

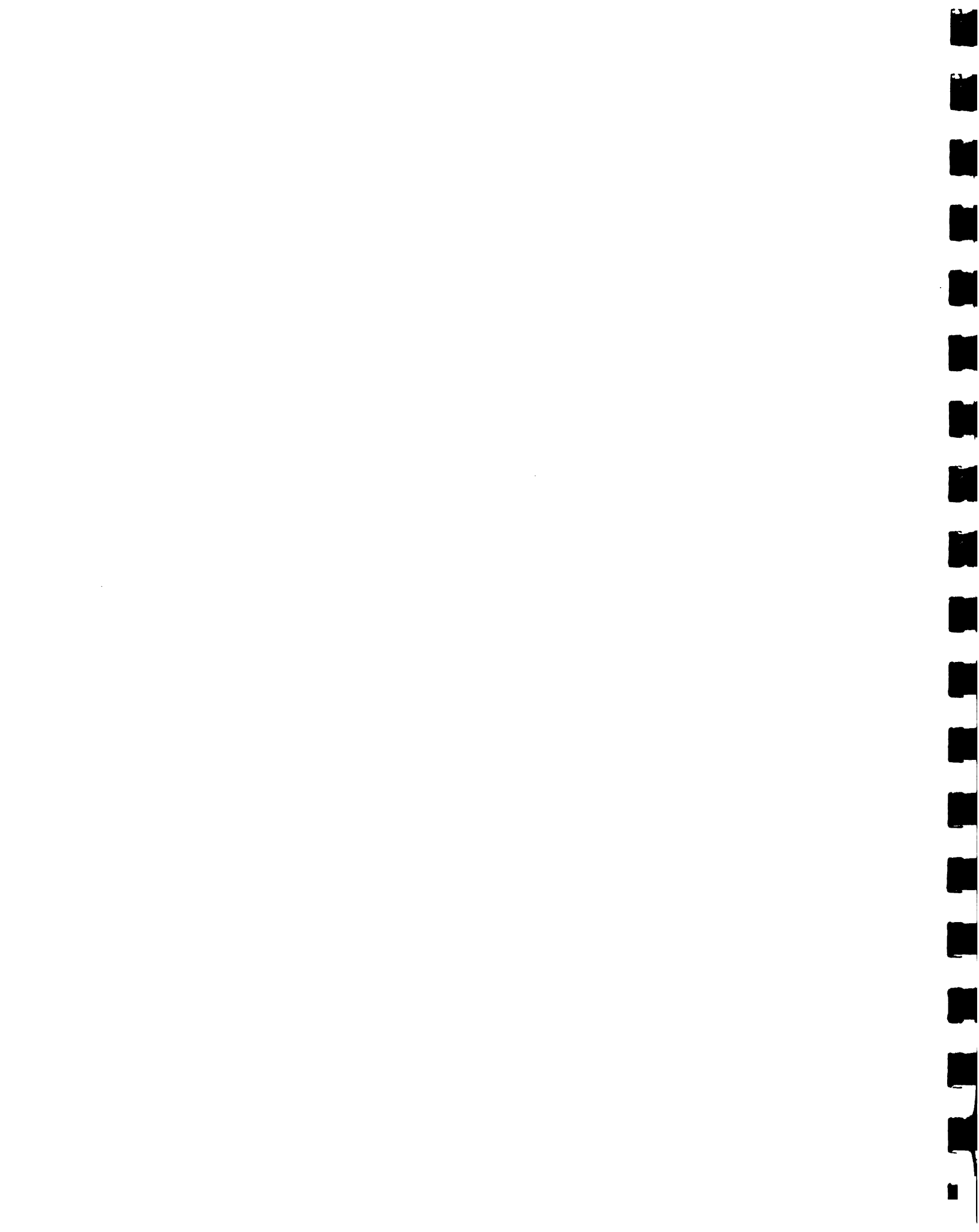
6.5 Calf management

- colostrum feeding
- navel treatment
- feeding regime

6.6 Internal parasites

- faecal examination
- control programme

6.7 Farmer reporting systems**6.8 Animal disease reporting forms****6.9 Clinical visits**



7. Record Systems

7.1 Why keep farm records?

7.2 What records to keep?

7.3 Physical records

- farm maps
- crop records
- livestock records
- financial records



JOB DESCRIPTION

PROJECT MANAGER

=====

QUALIFICATIONS

Level of Education: A second degree in Agro-economics, Farm Management or Animal Husbandry or BSc. in the same subject matters with 10 years managerial experience

- Responsibilities:
- Responsible for project implementation and monitoring.
 - Serve as executive secretary to the Board of Directors.
 - Coordinate activities of all institutions involved in the project program.
 - Submit a Progress Report every month to the Board of Directors.
 - Submit an Evaluation Report every 3 month to the Board of Directors.
 - Direct and oversee the activities of consultants.



JOB DESCRIPTION

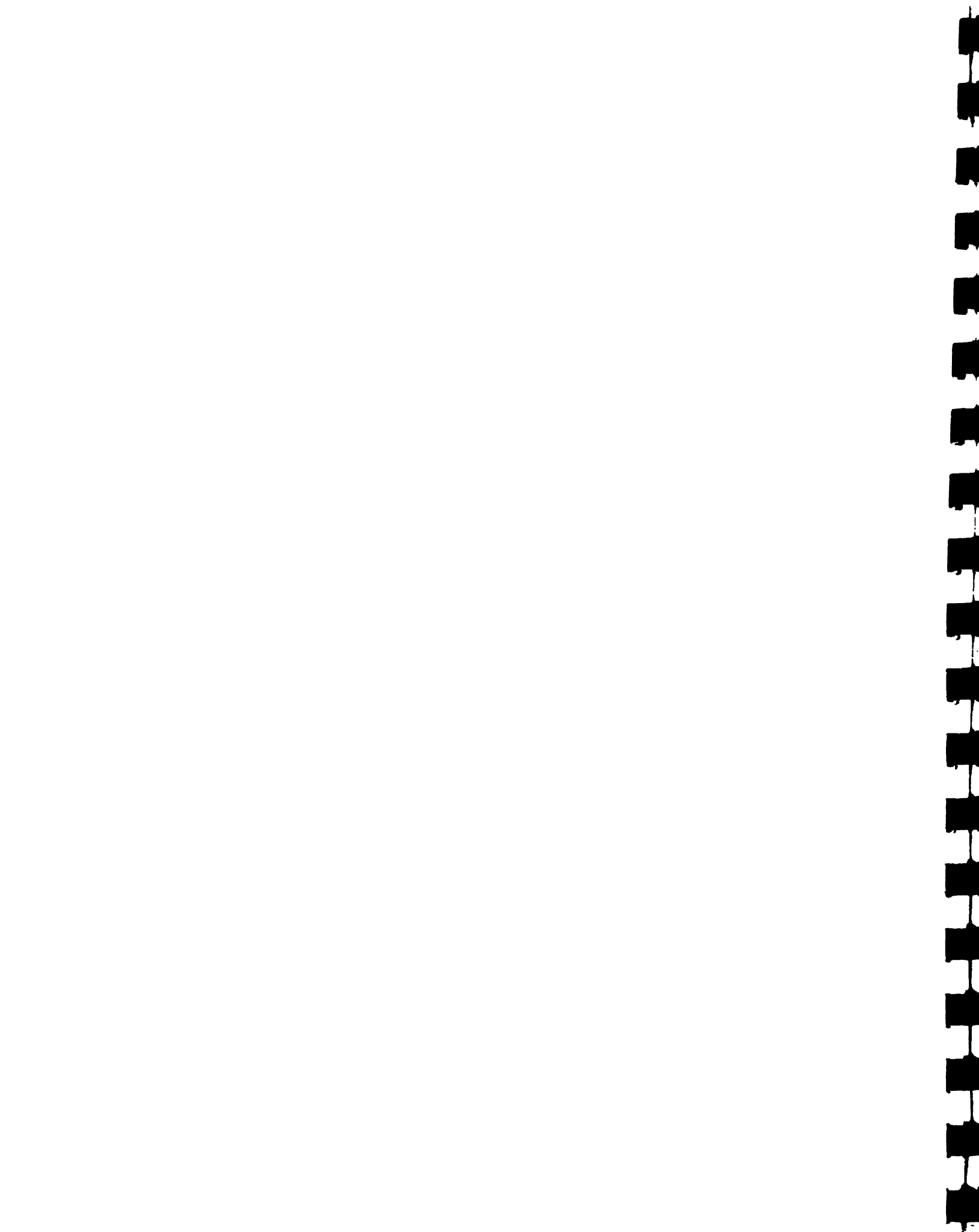
DAIRY PRODUCTION COORDINATORS
=====

QUALIFICATIONS

Level of Education: Bsc or Ing in Animal Husbandry or any other Agricultural field with preferably a major in Livestock.

Experience: At least 3 years of field experience

- Responsibilities:
- Oversee day to day field operations
 - Direct and control activities of Dairy Production Assistants
 - Oversee the Development and Day-to-day operation of Pilot Farms in his/her Area
 - Check and approve applications for loans for dairy farm projects and requests and technical assistance
 - Implement and monitor project operations.
 - Submit monthly Progress Report to the Project Manager
 - Submit evaluation report every 3 months to the Project Manager
 - Train Dairy Production Assistants and Farmers



JOB DESCRIPTION

DAIRY PRODUCTION ASSISTANTS
=====

QUALIFICATIONS

Level of Education: Technical diploma in Animal Husbandry or any other Agricultural field with (preferably) a major in livestock.

Experience: Desirable but not essential

- Responsibilities:
- Preparation of farm budgets in collaboration with farmers and loan officers
 - Assist farmers with implementation of the on-farm development on a day-to-day basis and supply technical assistance to farmers as required.
 - Submit a monthly progress report to the Project Coordinator
 - Submit a farm evaluation report every 3 months to the Project Coordinator.
 - Assist the Dairy Production Coordinators with training courses.



ANNEXES TO
CHAPTER V

PROJECT COSTS AND
BENEFITS

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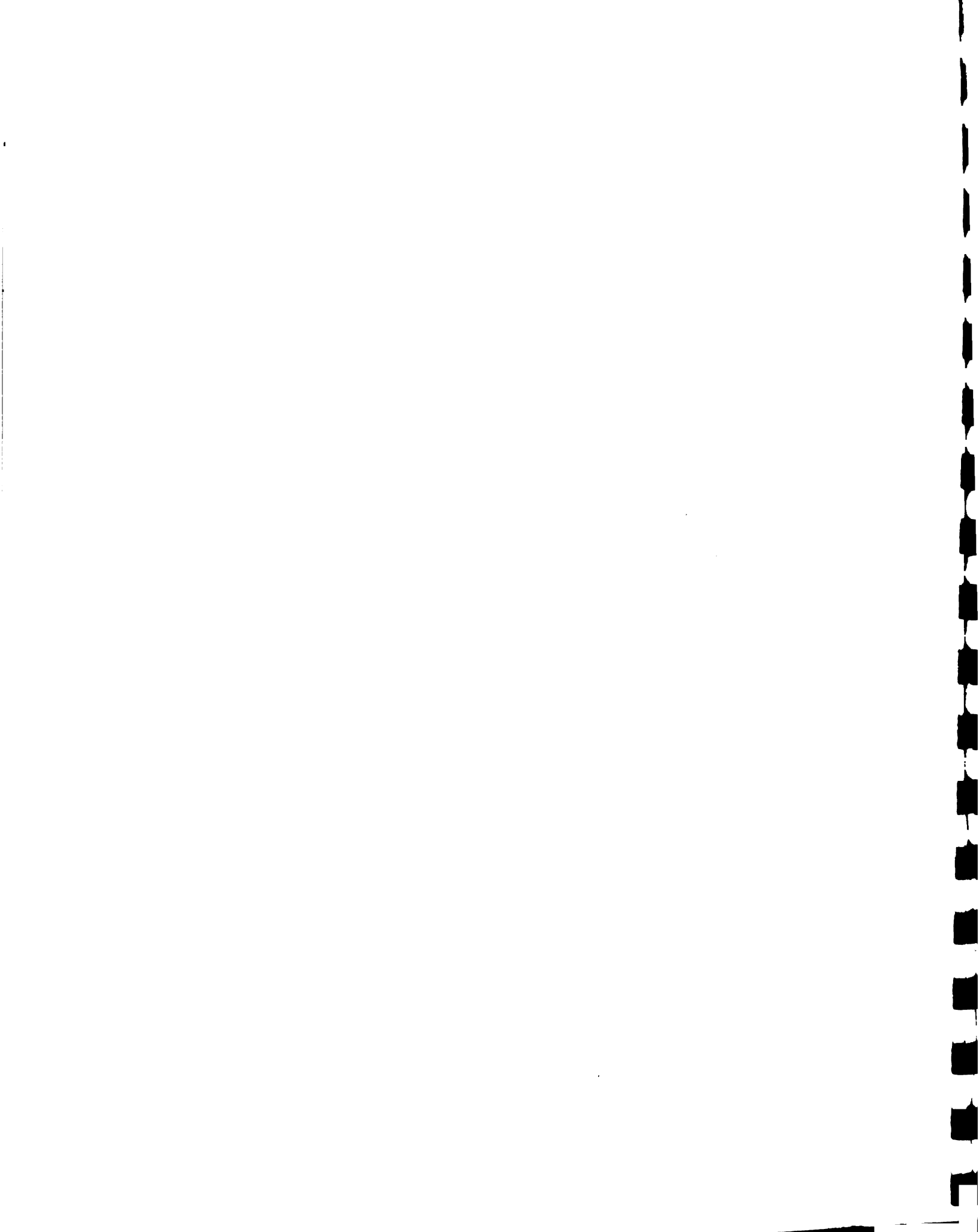
SURINAME DAIRY PRODUCTION PROJECT

PROJECT ADMINISTRATION COSTS: SALARIES AND ALLOWANCES
(\$000)

ANNEX TABLE V.1.1

	1	2	3	4	5	TOTAL
PERSONAL EMOLUMENTS						
BOARD ALLOWANCES:						
CHAIRMAN: SFL. 300/M	2.0	2.0	2.0	2.0	2.0	10.0
MEMBERS: 6 x SFL. 200/M	8.0	8.0	8.0	8.0	8.0	40.0
PROJECT MANAGEMENT:						
PROJECT MANAGER: US\$. 2500/M	30.0	30.0	30.0	30.0	30.0	150.0
ADMINISTRATOR: SFL. 2160/M	14.4	14.4	14.4	14.4	14.4	72.0
ACCOUNTANT: SFL. 2160/M	14.4	14.4	14.4	14.4	14.4	72.0
DAIRY PROJECT COORDINATORS: 3 x SFL. 2520/M	50.4	50.4	50.4	50.4	50.4	252.0
DAIRY PROJECT ASSISTANTS: 10 x SFL. 1620/M*	54.0	54.0	81.0	108.0	108.0	405.0
SECRETARY-TYPIST: SFL. 1200/M	8.0	8.0	8.0	8.0	8.0	40.0
TYPIST: SFL. 900/M	6.0	6.0	6.0	6.0	6.0	30.0
DRIVER/MESSENGER: SFL. 900/M	6.0	6.0	6.0	6.0	6.0	30.0
TOTAL	193.2	193.2	220.2	247.2	247.2	1101.0

* FIVE (5) RECRUITED FROM YEAR1 AND A FURTHER FIVE RECRUITED MIDDLE OF YEAR 3



SUPPLIERS DAIRY PRODUCTION PROJECT

PROJECT ADMINISTRATION COSTS: SPECIALISTS & SUPPLEMENTARY MANAGEMENT EXPENSES

(\$000)

V.1.2

CONSULTANCIES	1	2	3	4	5	TOTAL
FARM MANAGEMENT SPECIALIST @ \$9000/M x 24 M*	108.0	108.0				216.0
MILK MARKETING SPECIALIST @ \$9000/M. x 12 M	108.0					108.0
PASTURE SPECIALIST @ \$9000/M x 24 M	108.0	108.0				216.0
FARMER ORGANIZATION SPECIALIST @ \$9000 X 12 M	108.0					108.0
AGRICULTURAL CREDIT SPECIALIST @ \$9000 x 12 M	108.0					108.0
RECRUITMENT AND REPATRIATION (Including Project Manager)	36.0	16.0			5.0	57.0
ALLOWANCES FOR PROJECT MANAGER (Housing, Family, etc.)	24.0	24.0	24.0	24.0	24.0	120.0
TOTAL	600.0	256.0	24.0	24.0	29.0	933.0



SURINAME DAIRY PRODUCTION PROJECT
PROJECT IMPLEMENTATION UNIT
PURCHASE AND MAINTENANCE OF VEHICLES

PROJECT MANAGER

US\$

One (1) Heavy Duty, Four Wheel Drive Four-Door (Jeep-type) Diesel	18,000
--	--------

DAIRY PRODUCTION COORDINATORS

Three(3) Double Cab Four-Wheel Drive Diesel Pickups @ 20,000	60,000
---	--------

DAIRY PRODUCTION ASSISTANTS

Eight (8) Small Four-Wheel Drive Two-Door off-the Road Vehicles @ 7000	56,000
---	--------

GENERAL PURPOSE

One(1) Double Cab 4-W-D Diesel Pickup	20,000
---------------------------------------	--------

One 5-ton Diesel Truck (for all transport but particularly for grass distribution)	40,000
---	--------

 194,000
ANNUAL COSTS

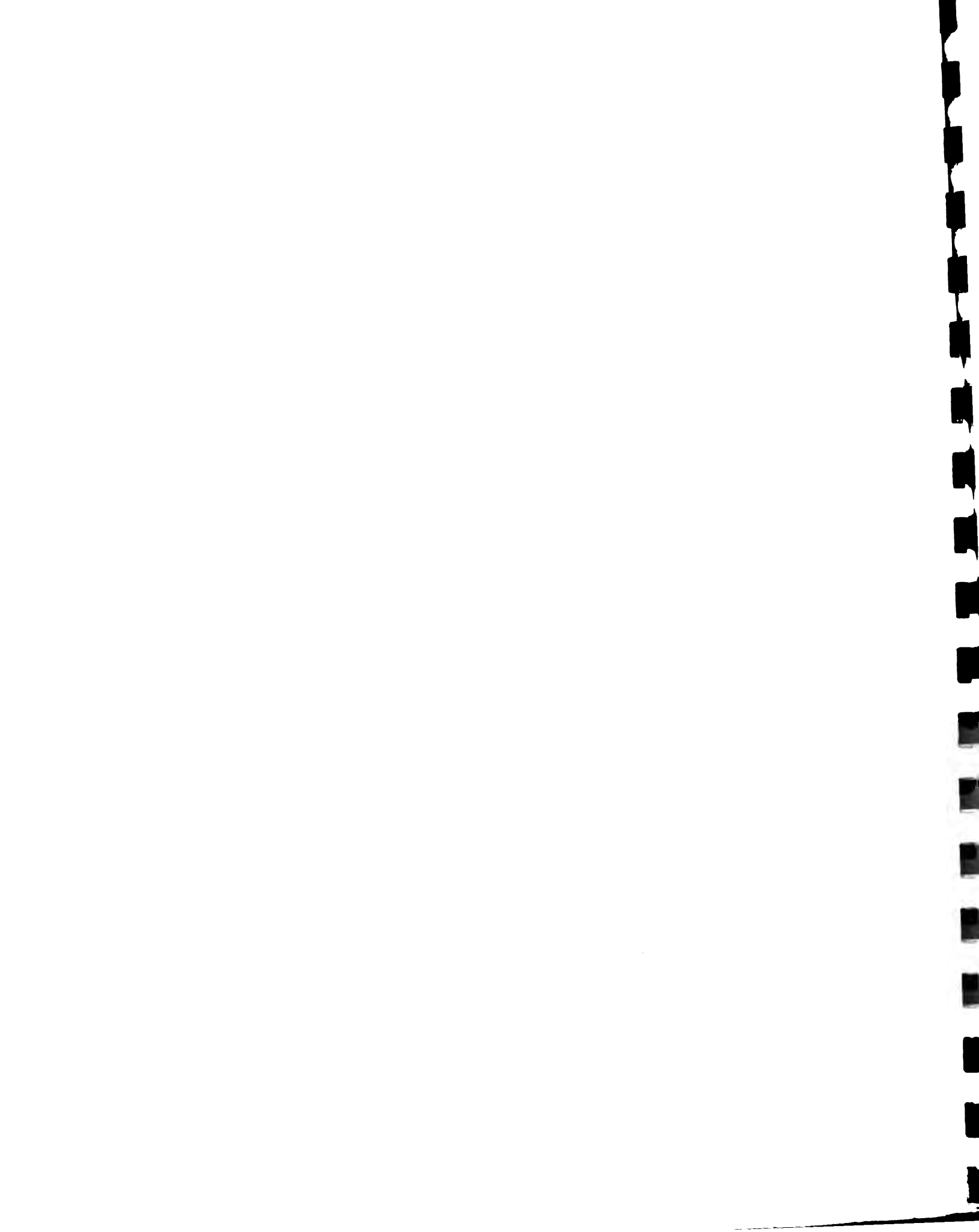
FLEET INSURANCE	21,000
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REPAIRS & MAINTENANCE	10,000
-----------------------	--------

FUEL AND LUBRICANTS	30,000
---------------------	--------

TRUCK DRIVER & LOADER	16,000
-----------------------	--------

 77,000



SURINAME DAIRY PRODUCTION PROJECT
PROJECT IMPLEMENTATION UNIT

FURNISHING, EQUIPMENT AND SUPPLIES

(US\$)

A. FURNITURE

\$ 8,000

Conference Table	\$ 400
3 Medium Size Desks @ 400	1200
8 Compact Desks @ 200	1600
22 Chairs @ 100	2200
5 Drawer Lateral Filing Cabinet	800
Storage Cabinet	300
2 Bookshelves @ 150	300
1 Secretary work station including Secretarial Chair	600
1 Computer work station including Secretarial Chair	600

B. OFFICE EQUIPMENT

\$ 10,350

Electronic Typewriter	800
Copying Machine with accessories	3600
Office Computer with printer	4000
3 Airconditioners @ 650	1950

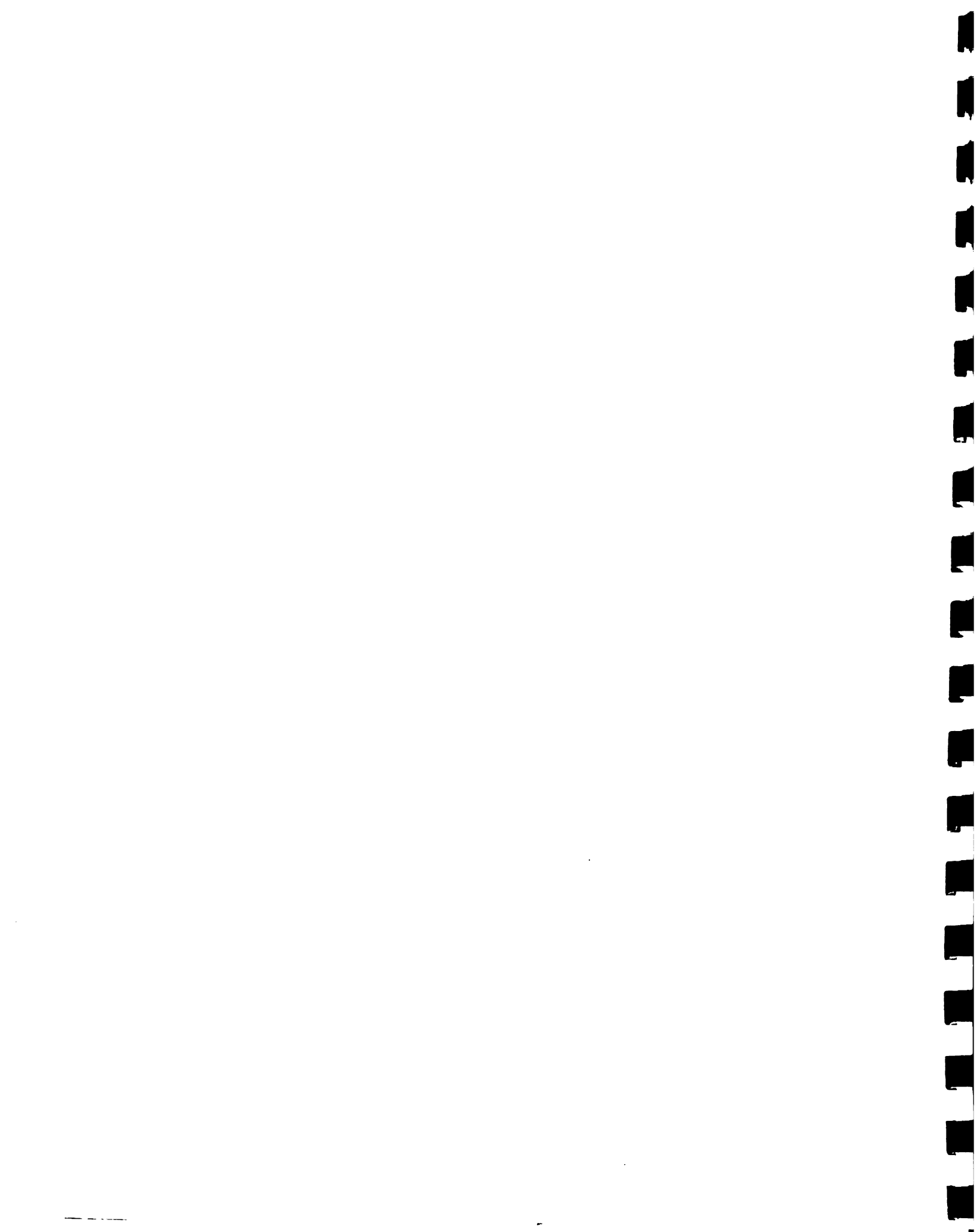
C. STATIONERY

\$ 3,700

Initial General Stock	2000
Computer Software	1200
Small Equipment	500

D. ANNUAL MAINTENANCE AND SUPPLIES, per year

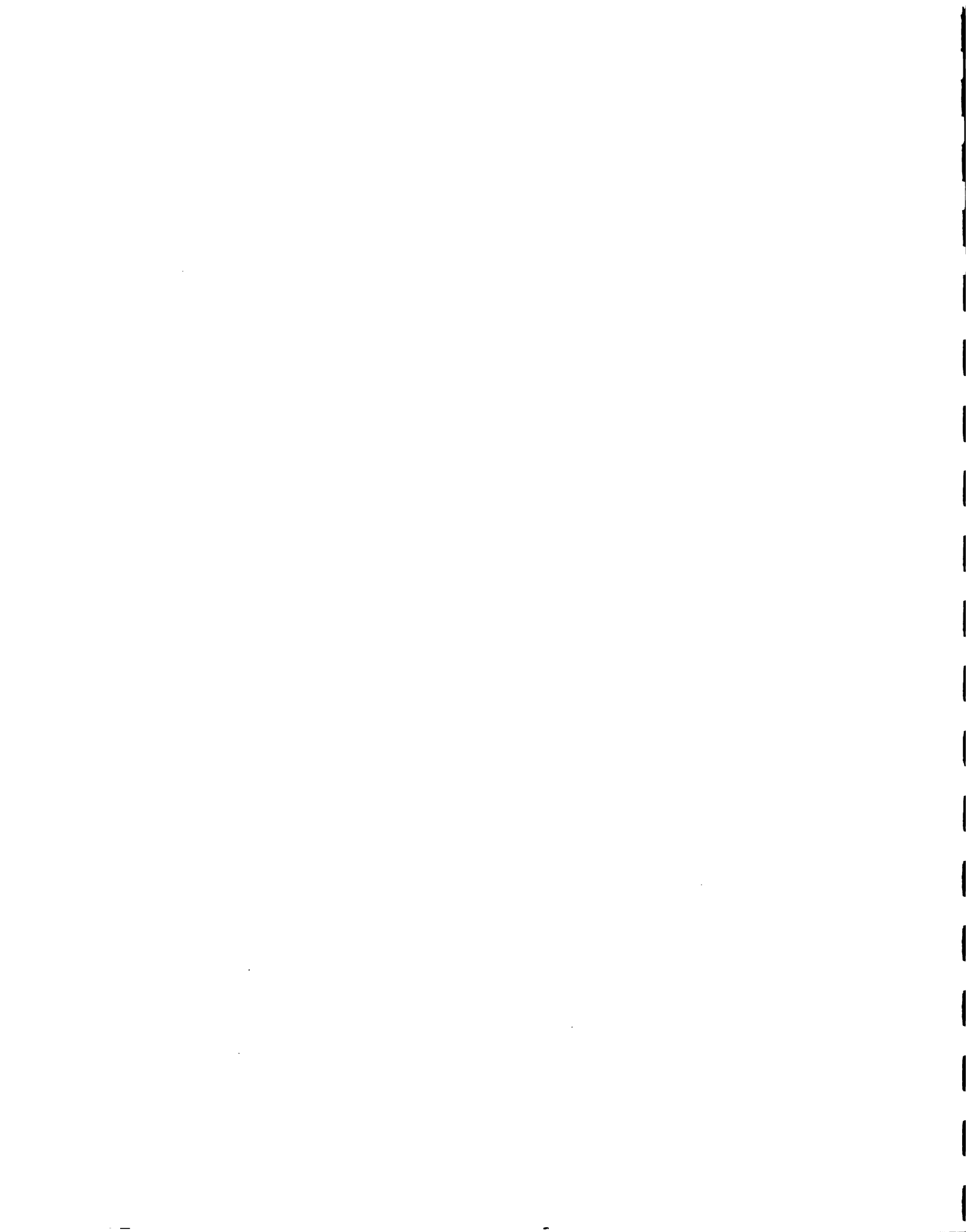
\$ 1,200



SURINAME DAIRY PRODUCTION PROJECT
PROJECT ADMINISTRATION

OFFICE ACCOMMODATION, FURNITURE, EQUIPMENT, SUPPLIES AND VEHICLES
(US\$000)

ITEM	V.1.5				
	4	5	TOTAL	4	5
OFFICE:					
Rental Office Space	20.0	20.0	20.0	20.0	20.0
Furnishing					
(+ 15% shipping costs)	9.2		9.2		
Office Equipment					
(+15% shipping costs)	11.8		11.8		
Stationery					
(+ 15% shipping, etc.)	5.6		5.6		
Annual Maintenance & Supplies		1.2	1.2	1.2	1.2
Electricity, Water, Telephones	2.0	2.0	2.0	2.0	2.0
SUB-TOTAL OFFICE	48.6	23.2	23.2	23.2	141.4
VEHICLES					
Purchase(+ 10% shipping costs)	214.0		214.0		
Annual Costs	40.0	77.0	77.0	77.0	77.0
SUB-TOTAL VEHICLES	254.0	77.0	77.0	77.0	562.0
GRAND TOTAL	302.6	100.2	100.2	100.2	703.4



SURINAME DAIRY PRODUCTION PROJECT
 CONSOLIDATED COSTS OF PROJECT IMPLEMENTATION UNIT
 (US\$000)

V.1.6

	YR1	2	3	4	5	TOTAL
Salaries and Allowances	193.20	193.20	220.20	247.20	247.20	1101.00
Consultancies, etc.	600.00	256.00	24.00	24.00	29.00	933.00
Office Equipment, Supplies and Vehicles	302.60	100.20	100.20	100.20	100.20	703.40
TOTAL	1095.80	549.40	344.40	371.40	376.40	2737.40



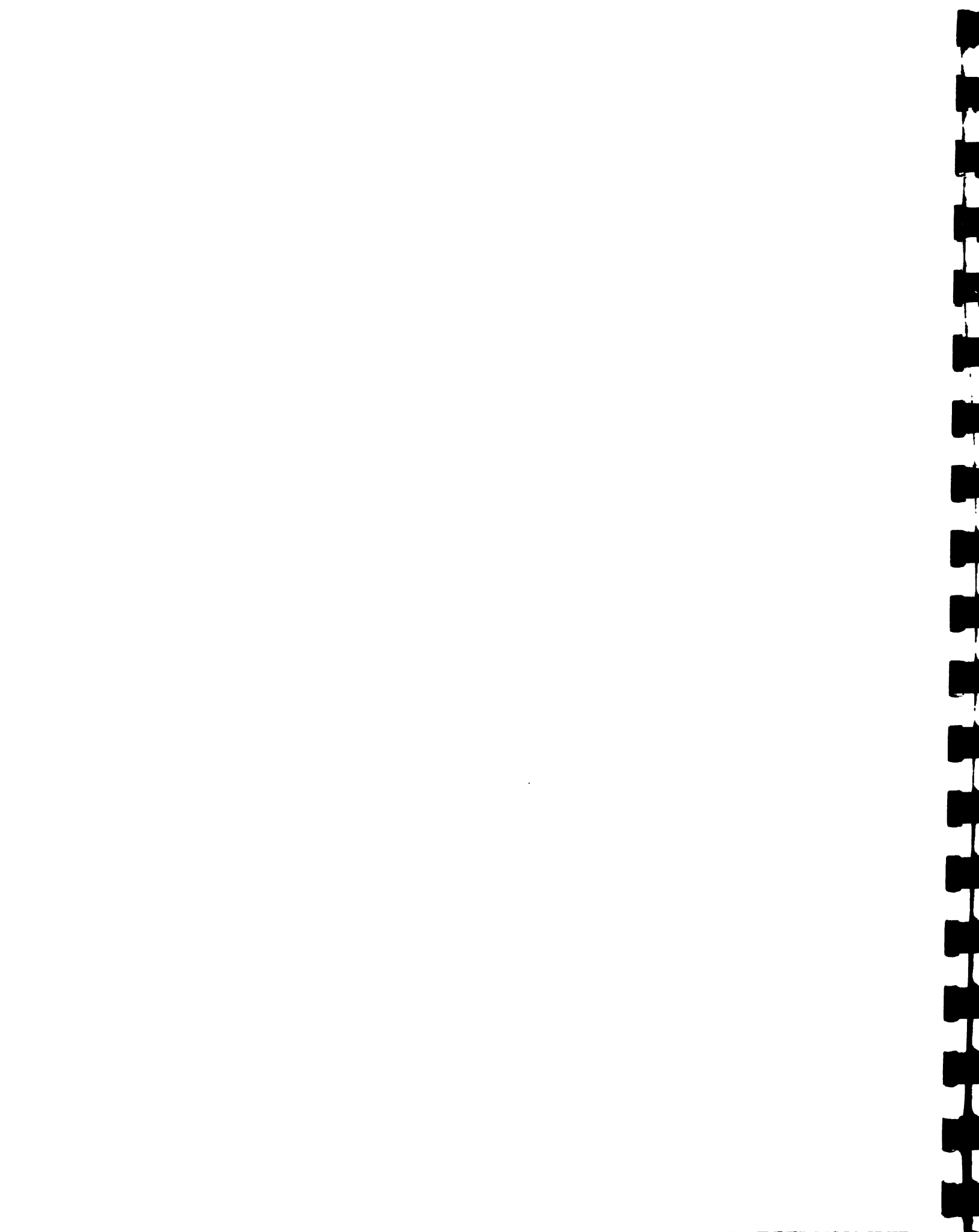
SURINAME DAIRY PRODUCTION PROJECT
 COST OF SUPPORT* TO DEMONSTRATION FARMS

(US\$000)

	YR1	2	3	4	5	6	7	8	9	10	TOTAL
1 Model A Farms	0.70	0.80	1.00	1.10	1.20	1.30	1.30	1.30	1.30	1.30	11.30
2 Model B Farms	2.60	2.70	3.00	3.00	3.20	3.40	3.40	3.30	3.50	3.30	31.40
2 Model C Farms	4.00	4.70	5.00	6.80	7.10	8.10	8.20	8.30	8.30	8.30	68.80
TOTAL	7.30	8.20	9.00	10.90	11.50	12.80	12.90	12.90	13.10	12.90	111.50

* 15% of Operative Costs





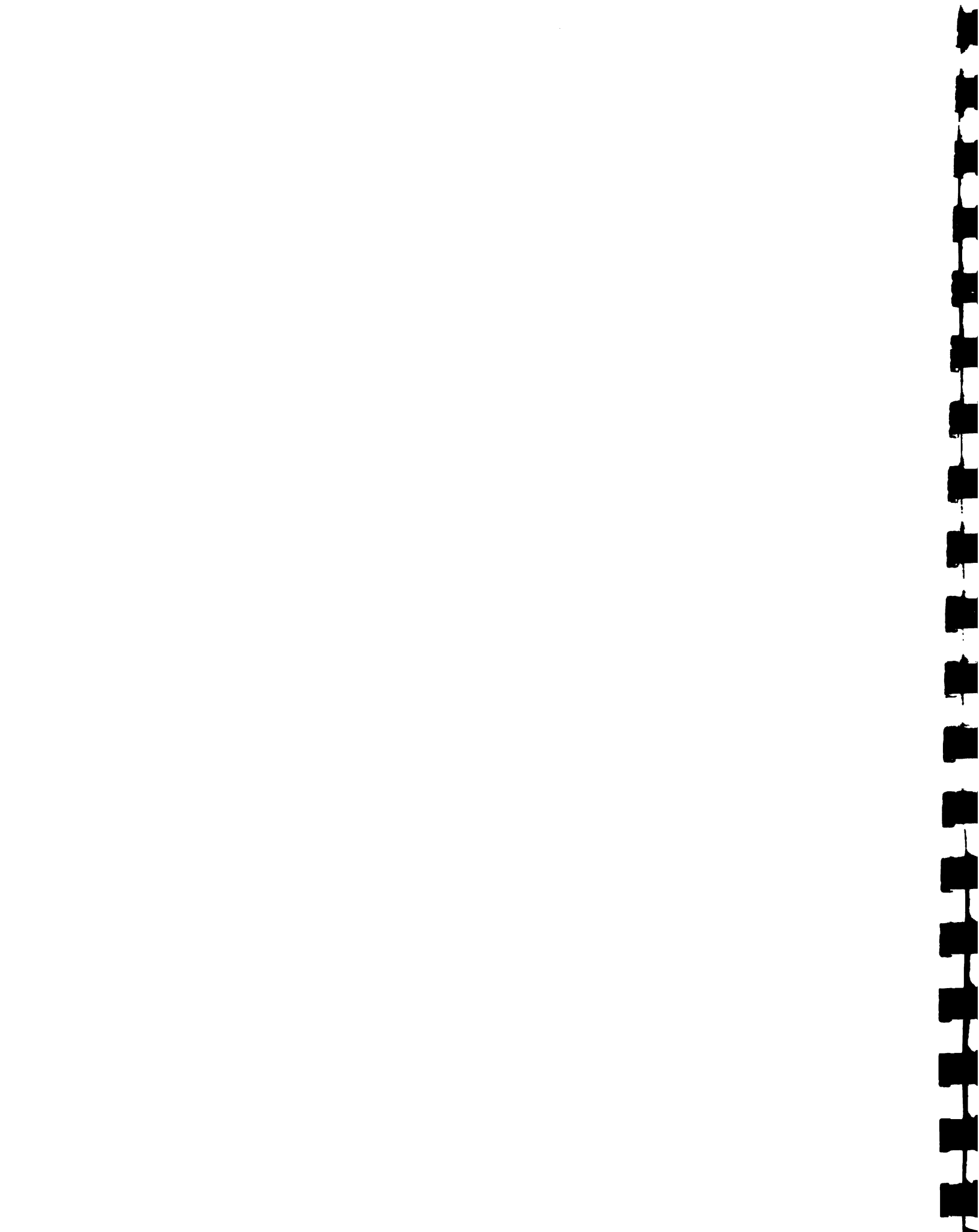


SURINAME DAIRY PRODUCTION PROJECT
SUMMARY COSTS GRASS MULTIPLICATION CENTER

(US\$000)

V.3.3

	YR1	2	3	4	5	6	7	8	9	10	TOTAL
GRASS MULTIPLICATION CENTER											
Capital Costs	77.2	14.8	0.2	0.2	3.6	0.2	0.2	0.2	4.4	0.2	101.2
Operations	25.5	27.9	27.9	27.9	27.9	27.9	27.9	27.9	27.9	27.9	276.6
TOTAL	102.7	42.7	28.1	28.1	31.5	28.1	28.1	28.1	32.3	28.1	377.8



SURINAME DAIRY PRODUCTION PROJECT

MARKETING COMPONENT
(\$000)

V.5.1

	1	2	3	4	5	6	7	8	9	10	TOTAL
MILK CHURNS											
(No.)	90	90	110	110	130	140	160	170	190	200	1390
COST)	15.3	15.3	18.7	18.7	22.1	23.8	27.2	28.9	32.3	34.0	236.3
3 TON TRUCKS											
(No.)	12	10	5	5	2	2	2	2	4	2	46
COST)	300.0	250.0	125.0	125.0	50.0	50.0	50.0	50.0	200.0	50.0	1,250.0
TOTAL	315.3	265.3	143.7	143.7	72.1	73.8	77.2	78.9	232.3	84.0	1,486.3



PROJECT COSTS

V.4.1

DETAILS OF MACHINERY SERVICE
LINE OF CREDIT (US\$000)

EQUIPMENT	UNIT COST	COST OF SIX UNITS YR.1	COST OF THREE UNITS YR.3
Heavy Duty 70HP Tractor	45.00	270.00	135.00
3 Disc Plough	4.25	25.50	12.75
8 Disc Harrow	2.70	16.20	8.10
Rotary Brush Cutter	7.20	43.20	21.60
Ditch Digger	5.20	31.20	15.60
Fertilizer Spreader	3.00	18.00	9.00
Dung Spreader (4 tonne)	7.60	45.60	22.80
Scraper Blade	2.70	16.20	8.10
Boom Sprayer	1.50	9.00	4.50
Agricultural Trailer	8.50	51.00	25.50
TOTAL	87.65	525.90	262.95



Replacement Machinery and Equipment for
Rehabilitation of Milk Processing Plant

	<u>US\$.</u>
Conveyor System for Milk Crates	16,200
Prepac Milk Conveyor System parts	30,000
Centrifugal Pumps for Water Supply and Cooling System	79,600
Well Pump	4,700
Cooling Unit Replacements Parts	50,000
Cool Room Compressor Units	150,000
Water Cooling Tower for Grenco Unit	22,300
Cool Room Replacement Parts	800
10 000 litre Centrifuge Replacement Parts	5,000
10 000 litre Milk Centrifuge Unit	55,000
6 000 litre Centrifuge Replacement parts	8,000
Replacement 2 Milk Tanks	60,500
Pasteurization Unit Replacement Parts	5,000
Attachements for Steam Installation	14,500
Steam Kettle Replacement Parts	32,100
Steam Kettle Unit	58,000
Steam Lines Replacement	66,000
Conveyor System for Churns	10,000
Churn Cleaning Machine	122,300
Churn Washing Machine Parts	10,000
Crate Washing Machine	10,000
Filling Machine for Milk: Replacement Parts	7,000
" " " Custard: " "	5,000
" " " Yoghurt: " "	5,600
" " " Flavoured Milk: " "	5,000
Prepac Filling Machines	90,700
Sterideal Installation Replacement Parts	7,600
Laboratory Small Equipment and Supplies	28,300
Cup Filling Machine	72,800
Miscellaneous Electrical Fittings	6,100
TOTAL	1,038,100

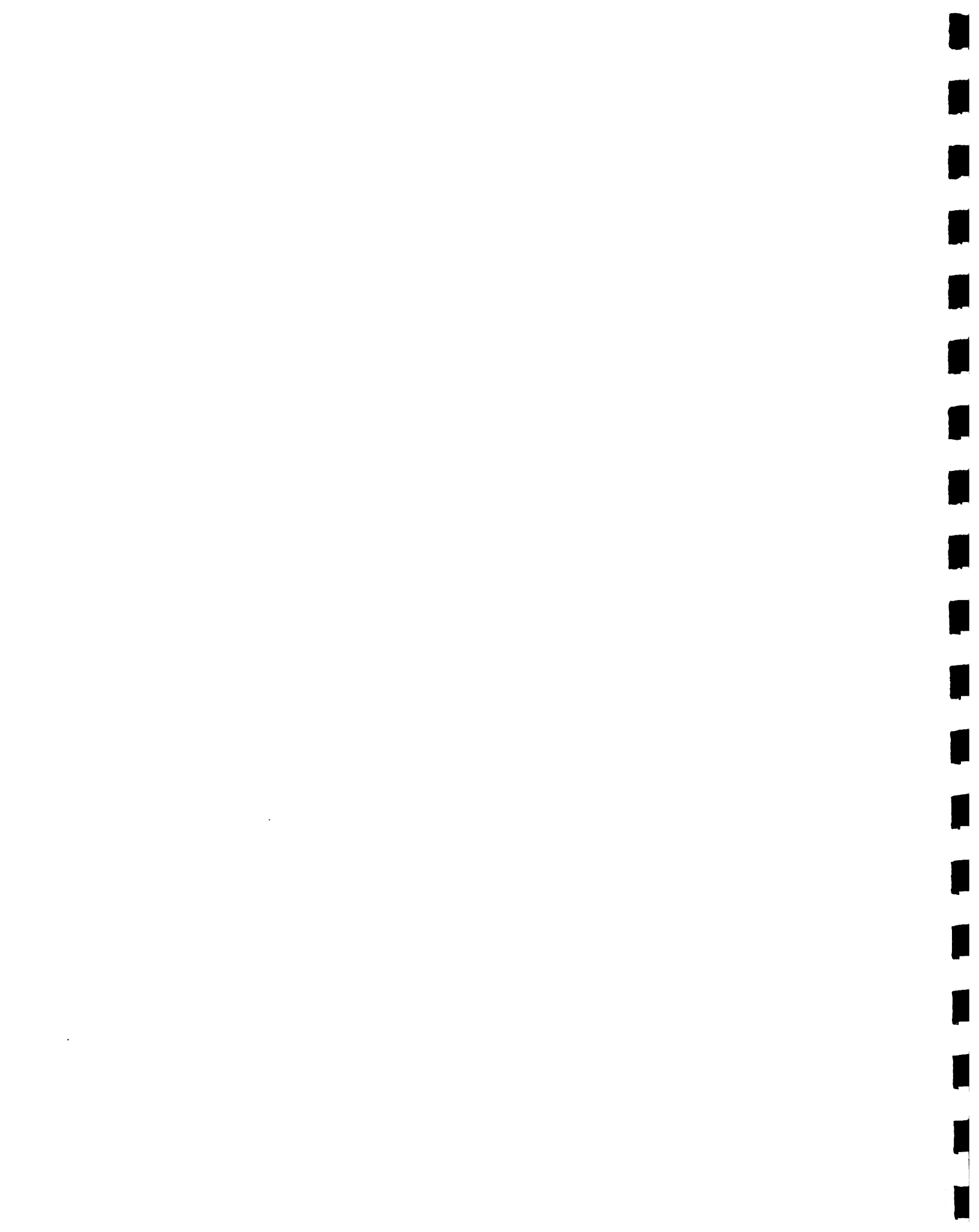


SURNAME DAIRY PRODUCTION PROJECT
CONSOLIDATION OF COSTS OF PROJECT IMPLEMENTATION AND SUPPORT SERVICES

(US\$000)

V.6.1

ITEM	YEARS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	TOTAL
PROJECT IMPLEMENTATION																	
Project Unit	1-5	1095.8	549.4	344.4	371.4	376.4											2737.4
Ministry of Agriculture	6-15						185.0	185.0	185.0	185.0	185.0	185.0	185.0	185.0	185.0	185.0	1850.0
Grass Multiplication Centre	1-10	102.7	42.7	28.1	28.1	28.1	31.5	28.1	28.1	32.3	28.1	28.1					405.9
Support to Demonstration Farms	1-10	7.3	8.2	9.0	10.9	11.5	12.8	12.9	12.9	13.1	12.9						111.5
Production of Technical Manual	2		10.0														10.0
Research Component	1-3	19.0	10.0	10.0													39.0
Costs of Administration																	
Credits	1-14	121.1	166.9	254.1	277.1	277.9	226.1	114.8	98.4	71.6	69.8	62.8	45.7	27.4	11.9		1825.6
Landbouw Bank Vehicles	1-2	14.0	14.0														28.0
Milk Plant Rehabilitation	1	1038.1															1038.1
Milk Plant Rehabilitation Labour	1-2	10.0	10.0														20.0
TOTAL		2408.0	811.2	645.6	687.5	693.9	455.4	340.8	324.4	302.0	295.8	275.9	230.7	212.4	196.9		8065.5



SURINAME DAIRY PRODUCTION PROJECT
ESTIMATIONS OF CREDIT LINES AND ADMINISTRATIVE COSTS OF CREDIT

(US\$000)

V.7.1

ITEM	YR1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	TOTAL
On-Farm Development																12130.7
Loans Project Farms	270.7	1423.5	2293.4	2645.8	2581.1	1935.3	677.6	303.3								
Repayment Schedule																
Adjusted for 20% default/delay	41.2	149.2	297.2	297.2	537.7	956.1	1435.3	1883.9	2245.6	2326.2	2092.2	1523.7	914.6	396.9	500.0	15299.8
Net Line of Credit Required - Farms	270.7	1382.3	2144.2	2348.6	2043.4	979.2										9168.4
Line of Credit for Machinery Services	525.9		263.0													788.9
Line of Credit for Milk Plant Rehabilitation	1038.1															1038.1
Line of Credit for Milk Collectors	315.3	265.3	143.7	72.1	73.8	77.2	78.9	232.3	84.0							1342.6
Net Line of Credit Required: Collectors	315.3	215.3	43.7													574.3
Total Special Credits	1879.3	265.3	406.7	72.1	73.8	77.2	78.9	232.3	84.0							3169.6
Costs of Administration of Farm Credits 13%	27.1	153.6	233.8	273.5	274.2	222.2	110.9	86.8	67.4	69.8	62.8	45.7	27.4	11.9		1667.1
Special Credits 5%	94.0	13.3	20.3	3.6	3.7	3.9	3.9	11.6	4.2							158.5
Total Administration Costs	121.1	166.9	254.1	277.1	277.9	226.1	114.8	98.4	71.6	69.8	62.8	45.7	27.4	11.9		1825.6

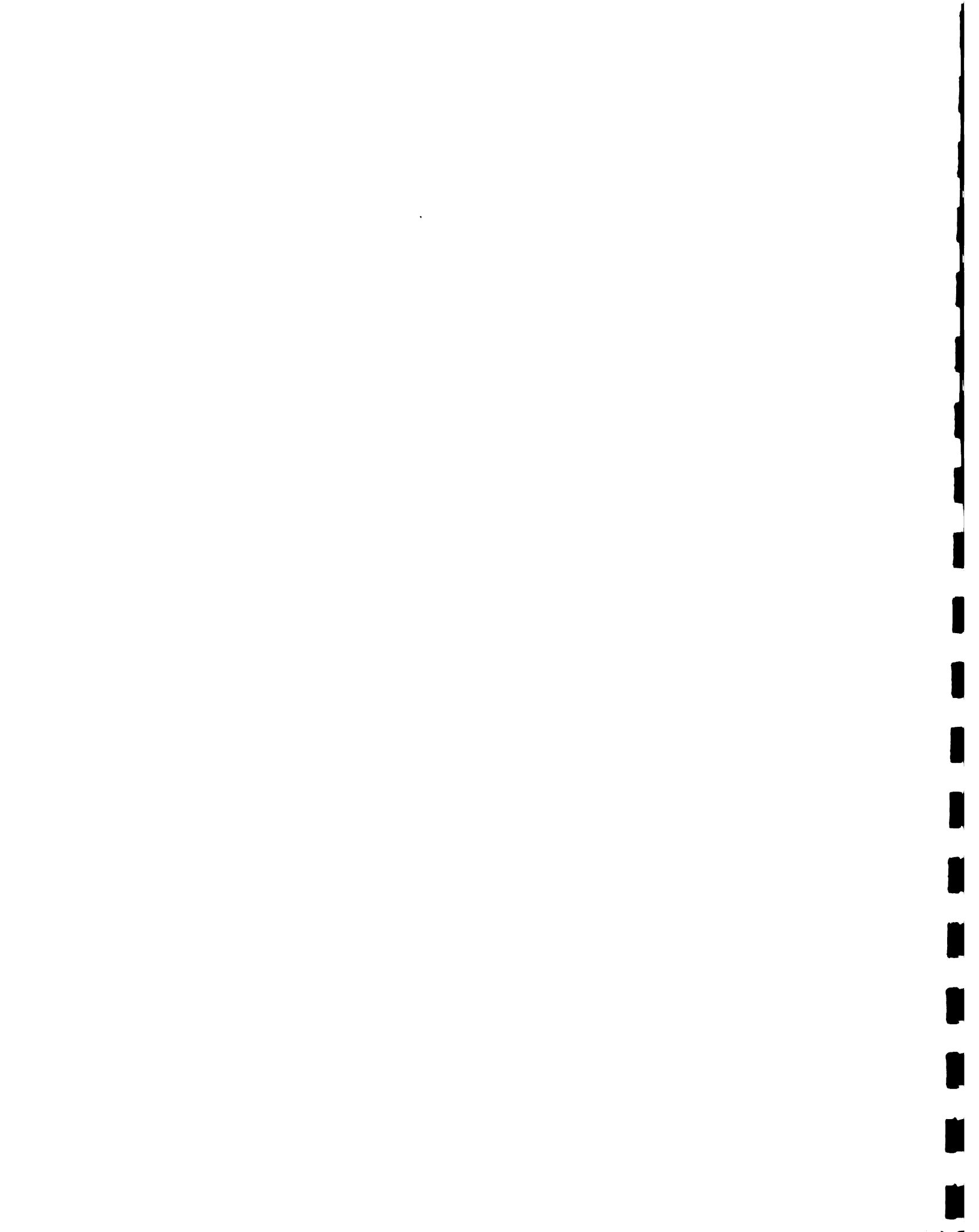


AGGREGATION OF ON-FARM INCREMENTAL COSTS AND INVESTMENTS

ALL PROJECT FARMS (US\$000)

V.8.1

	YR1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
MODEL A FARMS	188.00	647.00	876.00	993.00	1001.00	795.00	674.00	750.00	800.00	801.00	786.00	788.00	789.00	791.00	793.00
MODEL B FARMS	552.00	1499.00	2440.00	3099.00	3570.00	3384.00	3110.00	2889.00	3038.00	3072.00	2908.00	2838.00	2793.00	2722.00	2722.00
MODEL C FARMS	284.00	941.00	1606.00	2169.00	2512.00	2583.00	2355.00	2502.00	2308.00	2371.00	2382.00	2380.00	2386.00	2396.00	2383.00
TOTAL	1024.00	3087.00	4922.00	6261.00	7083.00	6762.00	6139.00	6141.00	6146.00	6244.00	6076.00	6006.00	5968.00	5909.00	5898.00



VALUE OF INCREASED MILK PRODUCTION
ALL FARMS YRS 1 - 15

V.9.1

	YR1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
:Project Farms in 000 L.	181.70	898.60	2079.50	4019.30	7790.50	10875.10	13626.70	1593.50	16399.30	17320.40	18000.00	18000.00	18000.00	18000.00	18000.00
:Adjusted for lateral impact															
:All farms (000 L.)	218.00	1078.00	2495.00	4823.00	9349.00	13050.00	16352.00	19144.00	19679.00	20784.00	21600.00	21600.00	21600.00	21600.00	21600.00
:Value @ \$fl. 1.10/1.															
:(Sfl.000)	240.00	1186.00	2745.00	5305.00	10284.00	14355.00	17987.00	21038.00	21647.00	22862.00	23760.00	23760.00	23760.00	23760.00	23760.00
:(US\$ 000)	133.00	659.00	1525.00	2947.00	5713.00	7975.00	9993.00	11699.00	12026.00	12701.00	13200.00	13200.00	13200.00	13200.00	13200.00



Value of Increased Livestock Production from Project Area

(US\$000)

V.9.2

	2	3	4	5	6	7	8	9	10	11	12	13	14	15
YRI	200.00	279.00	367.00	377.00	474.00	729.00	967.00	1213.00	1345.00	1395.00	1372.00	1365.00	1316.00	1453.00
MODEL A FARMS	1029.00	1429.00	2512.00	3275.00	3147.00	3809.00	4219.00	3900.00	4167.00	4426.00	4278.00	4344.00	4295.00	4344.00
MODEL B FARMS	306.00	479.00	622.00	855.00	1035.00	1442.00	1931.00	2019.00	2752.00	3011.00	3078.00	3118.00	3118.00	3118.00
MODEL C FARMS	1535.00	2187.00	3501.00	4507.00	4656.00	5980.00	7117.00	7132.00	8264.00	8832.00	8728.00	8827.00	8729.00	8915.00
SUB-TOTAL	659.00	1525.00	2947.00	5713.00	7975.00	9993.00	11699.00	12026.00	12701.00	13200.00	13200.00	13200.00	13200.00	13200.00
+ Value of Additional Milk from Project Area	2194.00	3712.00	6448.00	10220.00	12631.00	15973.00	18816.00	19158.00	20965.00	22032.00	21928.00	22027.00	21929.00	22115.00
TOTAL	2853.00	5237.00	9395.00	15933.00	20606.00	25966.00	30515.00	31184.00	33666.00	35232.00	35128.00	35227.00	35129.00	35315.00



SURINAME DAIRY PRODUCTION PROJECT
PROJECT CASH FLOW YEARS 1 - 15
(US\$000)

V.10.1

	YR1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	TOTAL
BENEFITS																
Value of Additional Milk and Animal Production From Project Area	945.0	2194.0	3712.0	6448.0	10220.0	12631.0	15973.0	18816.0	19158.0	20965.0	22032.0	21928.0	22027.0	21929.0	22115.0	221093.0
COSTS																
On-Farm Incremental Costs and Investments	1024.0	3087.0	4922.0	6261.0	7083.0	6762.0	6139.0	6141.0	6146.0	6244.0	6076.0	6006.0	5968.0	5909.0	5898.0	83666.0
Project Implementation and Support Services	2408.0	811.2	645.6	687.5	693.9	455.4	340.8	324.4	302.0	295.8	275.9	230.7	212.4	196.9	185.0	8065.5
Total Project Costs	3432.0	3898.2	5567.6	6948.5	7776.9	7217.4	6479.8	6465.4	6448.0	6539.8	6351.9	6236.7	6180.4	6105.9	6083.0	91731.5
Net Cash Flow	-2487.0	-1704.2	-1855.6	-300.5	2443.1	5413.6	9493.2	12350.6	12710.0	14425.2	15680.1	15691.3	15846.6	15823.1	16032.0	129361.5



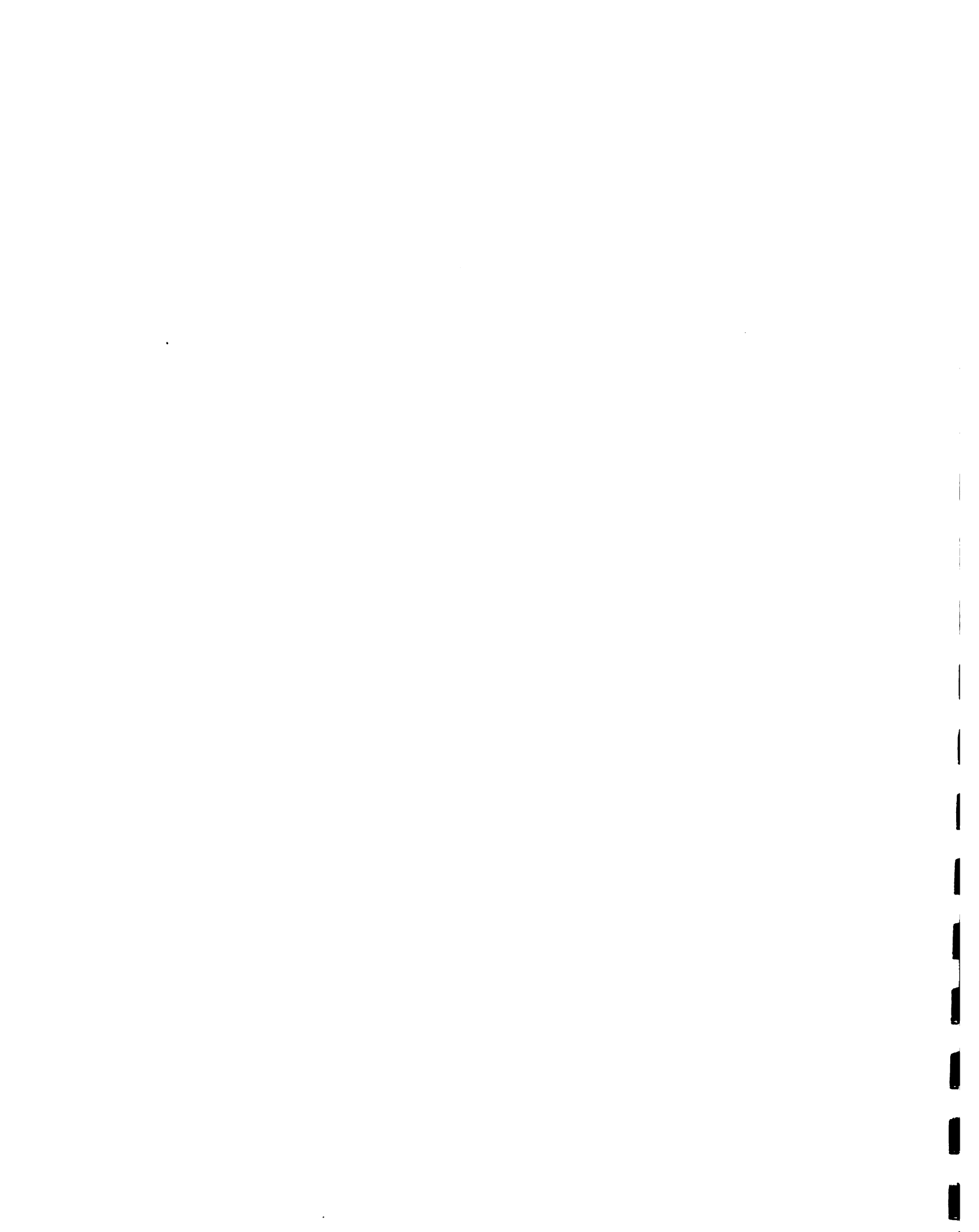
SURINAME DAIRY PRODUCTION PROJECT
FINANCIAL REQUIREMENTS YRS 1 - 5

(US\$000)

V.10.2

	YEARS	1	2	3	4	5	TOTAL
EXTERNAL FINANCE							
1. Project Implementation Project Unit	1 - 5	1095.8	549.4	344.4	371.4	376.4	2737.4
2. Grass Nursery	1 - 5	102.7	42.7	28.1	28.1	28.1	229.7
3. Demonstration Farms	1 - 5	7.3	8.2	9.0	10.9	11.5	46.9
4. Technical Manual	2		10.0				10.0
5. Applied Research	1 - 3	19.0	10.0	10.0			39.0
6. Vehicles for Agricultural Bank	1 - 2	14.0	14.0				28.0
7. Lines of Credit:							
(i) Farmers	1 - 6	270.7	1382.3	2144.2	2348.6	3022.6	9168.4
(ii) Milk Collectors	1 - 3	315.3	215.3	43.7			574.3
(iii) Milk Plant Rehabilitation	1 - 2	1038.1					1038.1
TOTAL		2862.9	2231.9	2579.4	2759.0	3438.6	13871.8

* Includes US\$ 979,200 for year 6



The Inter-American Institute for Cooperation on Agriculture (IICA) is the specialized agency for agriculture of the Inter-American system. The Institute was founded on October 7, 1942 when the Council of Directors of the Pan American Union approved the creation of the Inter-American Institute for Agricultural Sciences.

IICA was founded as an institution for agricultural research and graduate training in tropical agriculture. In response to changing needs in the hemisphere, the Institute gradually evolved into an agency for technical cooperation and institutional strengthening in the field of agriculture. These changes were officially recognized through the ratification of a new Convention on December 8, 1980. The Institute's purposes under the new Convention are to encourage, promote and support cooperation among the 29 Member States, to bring about agricultural development and rural well-being.

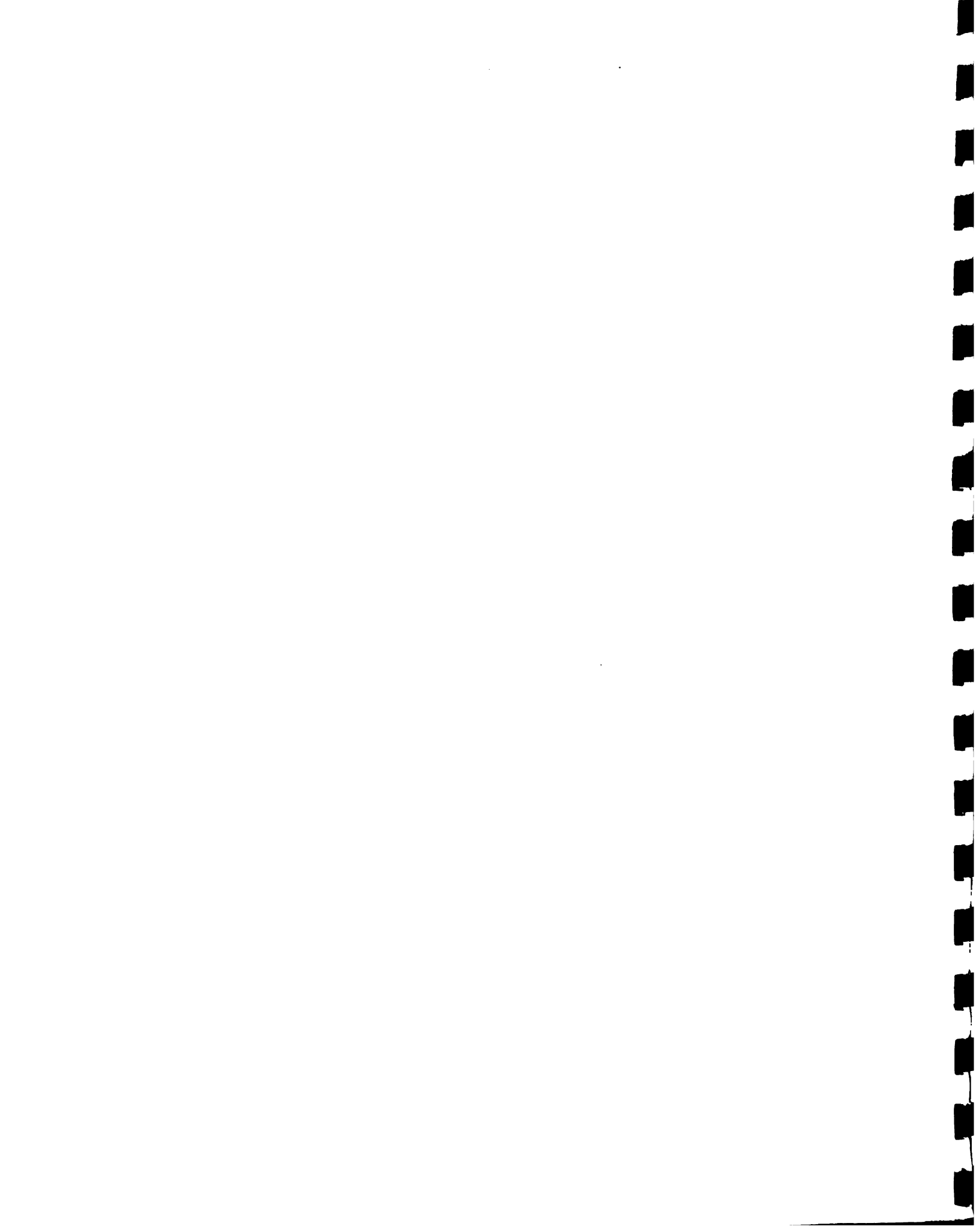
With its broader and more flexible mandate and a new structure to facilitate direct participation by the Member States in activities of the Inter-American Board of Agriculture and the Executive Committee, the Institute now has a geographic reach that allows it to respond to needs for technical cooperation in all of its Member States.

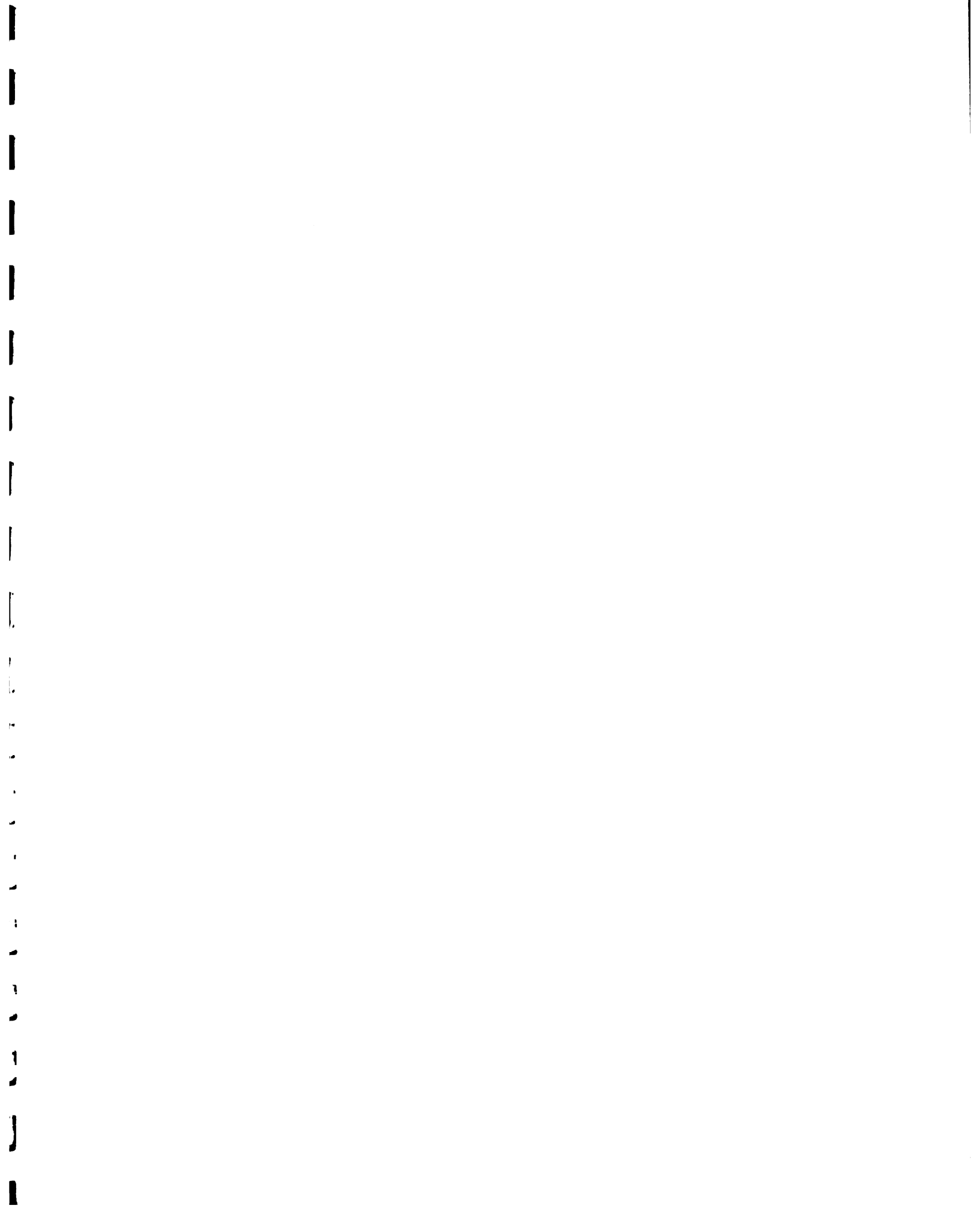
The contributions provided by the Member States and the ties IICA maintains with its twelve observer countries and numerous international organizations provide the Institute with channels to direct its human and financial resources in support of agricultural development throughout the Americas.

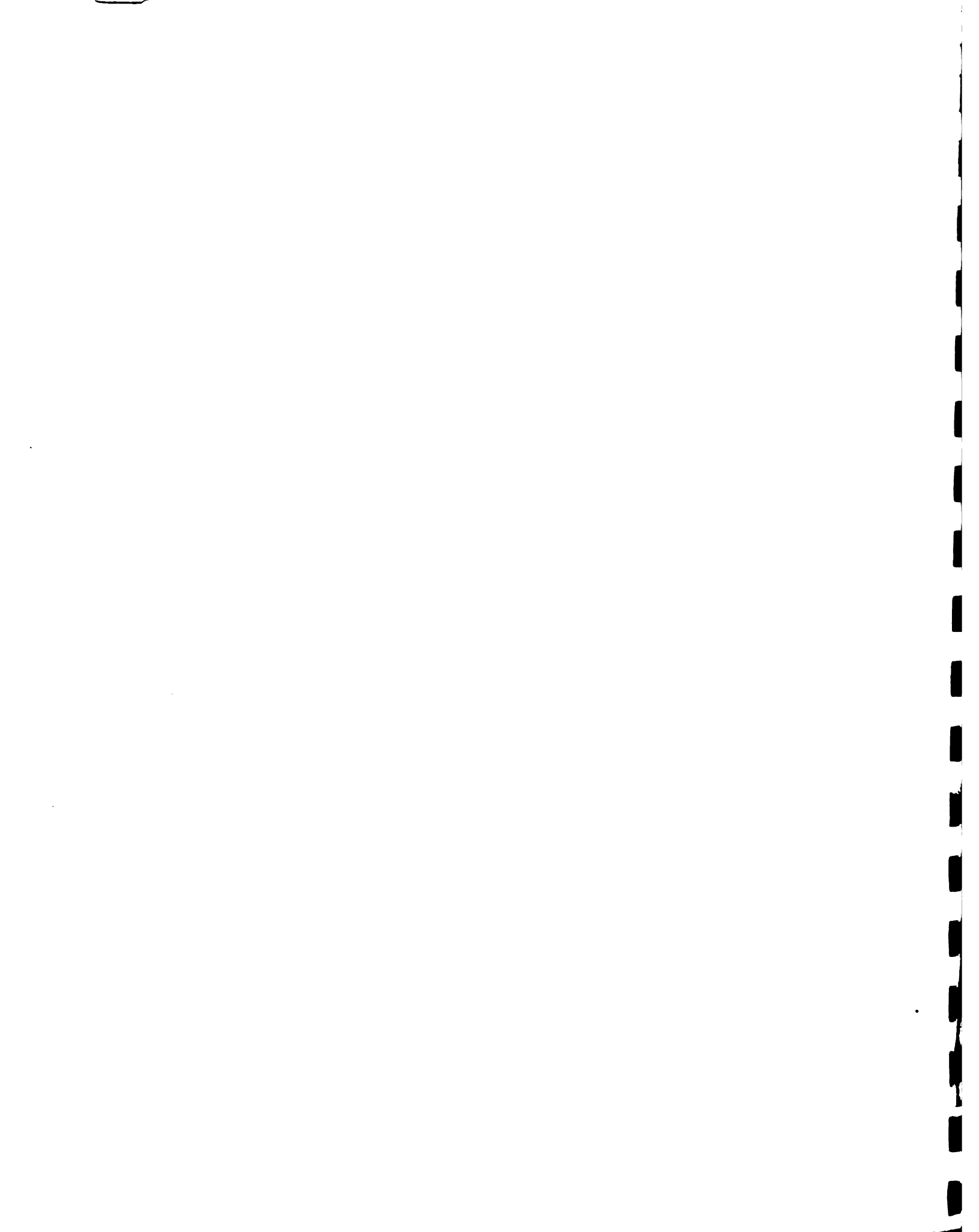
The 1987-1991 Medium Term Plan, the policy document that sets IICA's priorities, stresses the reactivation of the agricultural sector as the key to economic growth. In support of this policy, the Institute is placing special emphasis on the support and promotion of actions to modernize agricultural technology and strengthen the processes of regional and subregional integration.

In order to attain these goals, the Institute is concentrating its actions on the following five programs: Agrarian Policy Analysis and Planning; Technology Generation and Transfer; Organization and Management for Rural Development; Marketing and Agroindustry; and Animal Health and Plant Protection.

These fields of action reflect the needs and priorities established by the Member States and delimit the areas in which IICA concentrates its efforts and technical capacity. They are the focus of IICA's human and financial resource allocations and shape its relationship with other international organizations.







INTER-AMERICAN INSTITUTE FOR COOPERATION ON AGRICULTURE
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