



UTCHEE CREEK

GRAZING DEMONSTRATIONS

1976 - 1985

30 guine ha / 100-150 head
10 Bush ha
155 kg/head/year
0.42 kg/day



THE 40 ha DEMONSTRATION AREA

WHY IT WAS STARTED

The demonstration area was started in 1976.

It was set up to measure the beef production and economics of fattening on fertilized pastures.

One aim was to show that fertilizing of pastures does pay, even when beef prices are low.

WHAT IS THE SYSTEM?

The total area of the unit is 40 ha (100 acres).

- 75% guinea grass and centro - 30 ha
- 25% brachiaria (signal) - 10 ha

The guinea grass centro receives regular dressings of superphosphate and sodium molybdate, whereas the brachiaria also gets nitrogen fertilizer in the cooler months.

WHY THIS SYSTEM?

The system is based on guinea grass and centro, which have been found to form the most economic pasture on the wet coast.

Guinea grass/centro pastures do have some limitations.

- Slow winter growth
- Can be damaged by continued overgrazing

The brachiaria is included to overcome these problems. It shows good growth in winter when fertilized with nitrogen, which helps to fill in the winter feed shortage. It can also recover well from overgrazing.

The fertilizer bill for the guinea/centro pasture is about \$54/ha/year (\$22/ac/year) compared to \$227/ha/year (\$92/ac/year) for the nitrogen fertilized brachiaria.

HISTORY OF THE 40 ha DEMONSTRATION

ESTABLISHMENT

The area was previously a run down guinea grass pasture which had become overgrown with weeds and regrowth.

The area was cleared of timber and regrowth by bulldozer, and cultivated₁ to renovate the grass. It was₁ then fertilized with 400 kg ha¹ superphosphate and 0.5 kg ha¹ sodium molybdate (Mo).

Two paddocks were later oversown with Belalto centro.

The brachiaria paddock was cultivated, seeded and fertilized.

STOCKING

It was first stocked in January 1977, and built up to full stocking by early 1978. Since then, stock numbers have varied between 100 and 150 steers.

FERTILIZER

Half the area receives a maintenance dressing of phosphate fertilizer each year (300 kg/ha).

The brachiaria receives three applications of 130 kg ha⁻¹ urea (total of 390 kg urea ha⁻¹) applied in April, June and August.

Potash was applied at about 50 kg ha⁻¹ to the whole area in 1979. Tests have shown no further requirement for potash.

Molybdenum was applied at establishment in 1976, 1979 and again in September 1983.

WEED CONTROL

The brachiaria paddock received several slashings earlier on due to a poor strike, and was not grazed until late 1977. Some areas had to be replanted.

Parts of the guinea/centro paddocks were slashed in 1977, 1979 and 1981, following particularly wet conditions. The grass legume unit referred to as 'metamorphic' on the plan was slashed in 1981, 1982, 1983 and again in 1985.

RESULTS

SOIL ANALYSIS

Acid extractable P and exchangeable K levels for 1977 to 1984 are presented in Tables 1 and 2 respectively.

Improved P levels in Basalt 1 and Metamorphic resulted from 33.5 kg P applied in July 1983. Fertilizer applications are presented in Table 3. Though the P status has improved, levels are still considered marginal.

Exchangeable K has increased markedly compared to 1983 results though no application has been made since 1979.

ANIMAL PERFORMANCE

Data relating to stocking rates, gain, turn-off etc. is presented in Tables 4, 5 and 6.

Responses to the growth stimulants Ralgro and Synovex was observed and results are presented in Table 8.

Beast equivalents per acre in Table 4 show the extra use being made of the nitrogen fertilized brachiaria. The higher stocking is not primarily the result of increased numbers as these are similar to last year, but the number of head within the 390-450 kg liveweight range.

Table 5 indicates a slight improvement in per animal gain and a massive improvement in return per hectare. Turnoff was restricted in the previous year because of the much lighter introduction weight in 1982/83.

Though gain per head has remained fairly static the slight increase is directly attributed to a better class of cattle purchased this year. From the commercial point of view a liaison with such properties and a preparedness to pay a few extra cents per kilo for quality, would be extremely beneficial.

Table 6 presents a stock inventory, associated performance and price margins.

Three of the four deaths recorded resulted from urea poisoning. One from an extremely potent virus which is still haunting us. Tests have indicated that it is not the known 3 day strain. Quite a few deaths have been reported along the coast from what appears to be the same virus. Its' isolation through a programme of blood testing selected groups of cattle is urged.

Year by year price margins have varied little. The true value realised on the farm, or course, is that of subtracting the previous years purchase price. Quite considerable differences are then encountered.

Response to Ralgro and Synovex was observed from 10.xii.84 to 17.iv.85 (Table 8). The stock tested came from the one property (21 head introduced on 24.viii.84, and 48 head introduced on 15.xi.84).

Synovex marginally outperformed Ralgro ($0.03 \text{ kg head}^{-1} \text{ day}^{-1}$) with the lighter stores. Both the stimulates were considerably better than the control group ($0.10 - 0.13$).

No improved gain resulted from the application of Ralgro to the forward stores, Synovex caused a very significant improvement ($0.18 \text{ kg head}^{-1} \text{ day}^{-1}$).

Some of the differences between Ralgro and Synovex may be attributed to the products themselves. Synovex is a very firm capsule and is easily implanted whereas Ralgro tends to disintegrate with the impact of the plunger in the applicator.

No side-effects such as prolapsed rectums were observed from the use of Synovex.

CASH FLOW ANALYSIS

Receipts and expenditure are presented in Table 7.

Livestock sales were twice the previous years. As stated earlier this is attributed to the much lighter stock purchased in 1982/83 and the performance of some quality drafts introduced in 1984.

The need to slash the Metamorphic unit significantly increased the tractor costs by \$182. The rest was the result of nitrogen applications.

Fertilizer costs are superphosphate \$1526 and nitrogen in the form of urea \$1385.

The animal health bill should fall markedly in the future with the introductions of 2 covered back rubbers.

Labour has been costed at \$6.75 per hour as have tractor hours.

A significant reduction in the cost of the nitrogen fertilizer unit could be achieved by reducing the number of nitrogen applications to two i.e. 195 kg urea in April and 195 kg in July or August and the use of bulk fertilizer distribution.

TABLE 1

ACID EXTRACTABLE P (ppm)

Paddock	1977	1978	1979	1980	1981	1982	1983	1984
Brachiaria	17	20	15	15	14	14	9	10
Basalt 1	15	19	14	10	15	13	11	18
Metamorphic	17	26	19	15	15	17	9	18
Basalt 2	12	10	14	10	17	11	8	11

Sample depth 10 cm

TABLE 2

EXCHANGEABLE K (meq 100⁻¹ g)

Paddock	1977	1978	1979	1980	1981	1982	1983	1984
Brachiaria	0.17	0.29	0.20	0.28	0.29	0.27	0.28	0.36
Basalt 1	0.20	0.18	0.20	0.28	0.26	0.26	0.26	0.31
Metamorphic	0.29	0.32	0.37	0.34	0.29	0.34	0.34	0.44
Basalt 2	0.38	0.36	0.31	0.37	0.33	0.32	0.33	0.42

TABLE 3

DEMONSTRATION AREA FERTILIZER APPLICATIONS/HECTARE

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
PADDOCK	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
BRACH	400 kg Superphosphate	390 kg Urea	390 kg Urea	390 kg Urea	390 kg Urea	390 kg Urea	390 kg Urea	390 kg Urea	390 kg Urea	390 kg Urea
10 ha	400 kg Superphosphate	150 kg Super King	150 kg Super King	79 kg Potash	150 kg Super King	300 kg Superphosphate	300 kg Superphosphate	300 kg Superphosphate	300 kg Superphosphate	300 kg Superphosphate
BAS 1	0.5 kg Mo	336 kg		79 kg Potash	0.5 kg Mo	350 kg Superphosphate		350 kg Superphosphate		350 kg Superphosphate
7.7 ha	400 kg Superphosphate	400 kg Superphosphate		150 kg Super King				0.5 kg Mo		
NET	0.5 kg Mo	400 kg	390 kg	79 kg Potash	0.5 kg Mo	350 kg		350 kg		350 kg
17.0 ha	Superphosphate	Superphosphate	Superphosphate	150 kg Super King		Superphosphate		Superphosphate		Superphosphate
BAS 2	0.5 kg Mo	360 kg	79 kg Potash	150 kg				264 kg		300 kg
400 kg Superphosphate	400 kg Superphosphate	0.5 kg Mo	Super King					Superphosphate		Superphosphate

TABLE 4

STOCKING RATES (BEAST EQUIVALENTS/ACRE)

Paddock	Area (ac)	1978/79	1979/80	1980/81	1981/82	1982/83	1983/84	1984/95
Brachiarla	24.7	1.66	1.59	1.69	1.74	1.40	1.62	2.19
Basalt 1	19.0	1.13	1.02	1.01	0.94	0.85	0.89	1.07
Metamorphic	42.0	0.86	0.79	0.66	0.70	0.62	0.81	0.89
Basalt 2	13.1	0.71	0.83	0.82	0.72	0.96	0.84	0.86
Whole Area	98.8	1.09	1.04	1.01	1.01	0.90	1.03	1.25

TABLE 5

	Year 1 1976/77	Year 2 1977/78	Year 3 1978/79	Year 4 1979/80	Year 5 1980/81	Year 6 1981/82	Year 7 1982/83	Year 8 1983/84	Year 9 1984/85
Stocking Rate (steers/ha)	1.3	3.1	2.8	2.8	3.0	2.72	2.56	2.9	3.0
Daily liveweight gain (kg/head/day)	0.64	0.43	0.42	0.45	0.45	0.41	0.44	0.45	0.47
Fattening period (days)	159	244	437	437	299	372	459	350	378
Liveweight gain (kg/ha/year)	304	487	429	460	493	400	416	478	508
Net Cash Return	-\$243	-\$82	\$290	\$221	\$260	\$66	\$256	\$15	\$462

TABLE 6

	Year 1 1976/77	Year 2 1977/78	Year 3 1978/79	Year 4 1979/80	Year 5 1980/81	Year 6 1981/82	Year 7 1982/83	Year 8 1983/84	Year 9 1984/85	
STOCK NUMBERS										
Stock on hand at start of year	0	57	122	100	100	102	106	101	123	
Purchases	88	141	90	113	152	73	100	102	128	
Deaths	-	-	-	-	-	1	-	-	4	
Sales	31	76	112	112	150	68	105	80	157	
Stock on hand at end of year	57	122	100	100	102	106	101	123	90	
STOCKING RATE										
Total area (ha)	40	40	40	40	40	40	40	40	40	
Stocking rate (steers/ha)	1.3 <i>PE/ha</i>	3.1 <i>3.05</i>	2.8 <i>2.3</i>	2.8 <i>2.3</i>	3.0 <i>2.99</i>	2.7 <i>2.2</i>	2.56 <i>2.12</i>	2.9 <i>2.9</i>	3.0 <i>2.09 / 2.35 PE/ha</i>	
CATTLE PERFORMANCE										
Buy in weight (kg)	303	297 <i>377</i>	285 <i>280</i>	331 <i>406</i>	306 <i>278</i>	287 <i>321</i>	266 <i>249</i>	302 <i>378</i>	286 <i>269</i>	
Sell out weight (kg)	437	459	479	483	450	476	432	455	453	
Fattening period (days)	159	244	437	437	299	372	459	350	378	
Daily gain (kg/head/day)	0.64	0.43	0.42	0.45	0.45	0.41	0.44	0.45	0.47	
CATTLE PRICES (\$/head)										
Buy in price	63	68	129	217	190	152	188	242	272	
Sell out price	105	128	250	323	284	260	330	352	373	
Price margin	42	60	121	106	94	108	142	110	101	

155 performance
Low cost/low
↑

3018
8 = 377 kg
450
= 0.83 PE

TABLE 7
CASH FLOW

	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82	1982/83	1983/84	1984/85
<u>RECEIPTS</u>									
Sales of fattened stores (after selling costs)	3208	9043	28001	36116	42574	17676	34648	28148	58622
Less:									
Purchases	5580	9628	11599	24564	22281	11083	-3761	24638	34869
	<u>-\$2372</u>	<u>-\$ 585</u>	<u>\$16402</u>	<u>\$11552</u>	<u>\$13693</u>	<u>\$ 6593</u>	<u>-\$5887</u>	<u>\$ 3510</u>	<u>\$23753</u>
<u>PAYMENTS</u>									
<u>Maintenance costs</u>									
Tractor costs	-	118	311	185	226	90	516	109	260
Hired labour	46	372	985	457	678	585	1105	827	1451
Pest control	-	-	-	-	-	-	-	-	-
Weed control (chemical)	-	-	23	7	-	30	-	-	-
Maintenance fertilizer	-	1471	2705	1602	1352	2703	3445	1381	2912
Animal health	46	345	141	72	202	185	265	246	412
Administration (est.)	100	100	100	100	100	100	100	100	100
Rates etc. (est.)	200	200	200	200	200	200	200	200	200
Pasture reseeding	-	90	155	-	-	-	-	-	-
Miscellaneous	-	-	180	77	42	60	22	30	85
	<u>\$ 392</u>	<u>\$ 2705</u>	<u>\$ 4800</u>	<u>\$ 2700</u>	<u>\$ 3300</u>	<u>\$ 3953</u>	<u>\$ 5653</u>	<u>\$ 2893</u>	<u>\$ 5420</u>
<u>CAPITAL EXPENDITURE</u>									
Bulldozer, seed, fertilizer, labour etc.	\$6939	-	-	-	-	-	-	-	-
TOTAL CASH PAYMENT	\$7330	\$2705	\$ 4800	\$ 2700	\$ 3300	\$ 3953	\$ 5653	\$ 2893	\$ 5420
ANNUAL CASH SURPLUS OR DEFICIT	-\$9703	-\$3290	\$11602	\$ 8852	\$13393	\$ 2640	-\$10234	\$ 617	\$18333
CUMULATIVE CASH SURPLUS OR DEFICIT	-\$9703	-\$12993	-\$1391	\$ 7461	\$17354	\$20494	\$30728	\$31345	\$49678

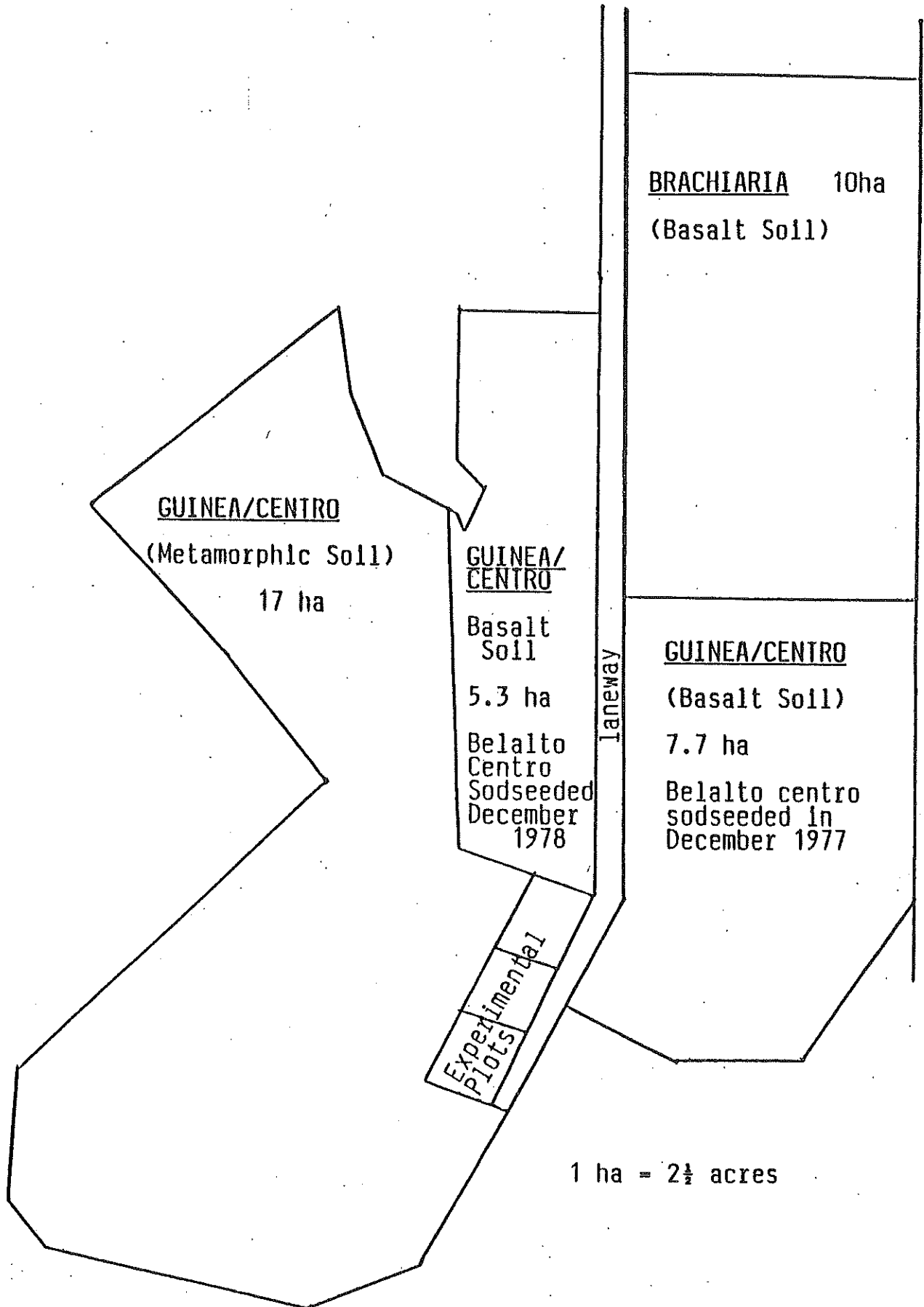
TABLE 8

RALGRO/SYNOVEX OBSERVATION

10/12/1984 - 17/4/1985

10/12/84	<u>RALGRO 16 head</u>	17/4/85	Gain/Day
Average Weight 282.5 kg		Average Weight 371.5 kg	0.70 kg
10/12/84	<u>SYNOVEX 16 head</u>	17/4/85	Gain/Day
Average Weight 284.6 kg		Average Weight 377.4 kg	0.73 kg
10/12/84	<u>CONTROL 16 head</u>	17/4/85	Gain/Day
Average Weight 288.1 kg		Average Weight 361.6 kg	0.58 kg
10/12/84	<u>RALGRO 7 head</u>	17/4/85	Gain/Day
Average Weight 371.1 kg		Average Weight 423.7 kg	0.41 kg
10/12/84	<u>SYNOVEX 7 head</u>	17/4/85	Gain/Day
Average Weight 375.4 kg		Average Weight 449.1 kg	0.58 kg
10/12/84	<u>CONTROL 7 head</u>	17/4/85	Gain/Day
Average Weight 383.3 kg		Average Weight 434.1 kg	0.40 kg

PLAN OF THE 40 ha DEMONSTRATION AREA



THE LOW INPUT BRACHIARIA (SIGNAL GRASS) UNIT

BACKGROUND

The DPI has long been advocating the use of fertilized grass/legume pastures for beef production on the coast.

DPI Officers have maintained that a legume and regular fertilizer inputs are required for a productive and persistent pasture. Without these, pastures decline and weeds invade.

Some graziers have suggested that unfertilized brachiaria (signal grass) can

- form a persistent weed free pasture
- give adequate stocking rates and weight gains
- and be low cost

This unit has been set up to test this, by measuring cattle performance, as well as the inputs involved.

DEVELOPMENT

The total area of the unit is 3.6 ha (9 acres).

It is made up of two paddocks, with the cattle rotating between the two.

The paddock next to the demonstration area was originally elephant grass. This was burnt and disced out in May 1980, and the brachiaria seed planted in June 1980.

The other paddock was mainly planted in November 1979. Small patches, however, were badly infested with coarse guinea, and were replanted with brachiaria in mid 1980.

The area was slashed in late 1980 to reduce weeds, and horses were grazed to control the coarse guinea.

Six cattle were introduced in February 1981, and a further three in April 1981. The stock number has been maintained at nine since then. This is a stocking rate of 2.5 beasts/ha (1 beast/acre).

Since stocking, there has been no fertilizer or chemical weed control. A small area of snake weed was slashed in June 1983.

Performance of the unit since the start is summarised in the following tables.

TABLE 1

UNFERTILIZED BRACHI DEMONSTRATION AREA

	1980/81	1981/82	1982/83	1983/84	1984/85
Stocking Rate (steers/ha)	2.5	2.5	2.5	2.5	2.5
Daily Liveweight Gain (kg/head/day)	0.51	0.36	0.42	0.35	0.42
Fattening Period (days)	n/a	299	398	544	458
Liveweight Gain (kg/ha/year)	213	328	388	320	377
Net Cash Return	-\$569	\$241	\$ 50	\$248	\$ 84

TABLE 2

	1980/81	1981/82	1982/83	1983/84	1984/85
<u>STOCK NUMBERS</u>					
Stock on hand at start of year	-	9	9	9	9
Purchases	9	13	5	8	8
Deaths	-	-	-	-	-
Sales	-	13	5	8	8
Stock on hand at end of year	9	9	9	9	9
<u>STOCKING RATE</u>					
Total area (ha)	3.6	3.6	3.6	3.6	3.6
Stocking rate (steers/ha)	2.5	2.5	2.5	2.5	2.5
<u>CATTLE PERFORMANCE</u>					
Buy in weight (kg)	297	294	308	296	297
Sell out weight (kg)	n/a	451	465	463	458
Fattening period (days)	n/a	299	398	544	407
Daily liveweight gain	0.51	0.36	0.42	0.35	0.42
<u>CATTLE PRICES (\$)</u>					
Buy in price	220	169	258	237	268
Sell our price	n/a	254	343	384	360
Price margin	n/a	85	85	147	92

TABLE 3

CASH FLOW

	1980/81	1981/82	1982/83	1983/84	1984/85
<u>RECEIPTS</u>					
Sales of fattened stores (After selling costs)	-	3305	1713	3072	2881
<u>Less</u>					
Purchases	1985	2193	1287	1899	2146
	<u>-\$1985</u>	<u>\$1112</u>	<u>\$ 426</u>	<u>\$1173</u>	<u>\$ 735</u>
<u>PAYMENTS</u>					
<u>Maintenance Costs</u>					
Tractor costs	-	-	3	-	-
Hired labour	30	174	171	210	331
Pest control	-	-	-	-	-
Weed control	-	-	-	-	-
Maintenance fertilizer	-	-	-	-	-
Animal health	4	16	31	28	53
Administration (Est.)	10	10	10	10	10
Rates (Est.)	20	20	20	20	20
Pasture re-seeding	-	-	-	-	-
Miscellaneous	-	24	10	12	15
	<u>\$64</u>	<u>\$244</u>	<u>\$245</u>	<u>\$280</u>	<u>\$429</u>
<u>CAPITAL EXPENDITURE</u>	<u>N/A</u>	<u>NIL</u>	<u>NIL</u>	<u>NIL</u>	<u>NIL</u>
TOTAL CASH PAYMENT	\$ 64	\$ 244	\$ 245	\$ 280	\$ 429
ANNUAL CASH SURPLUS/DEFICIT	-\$2049	\$ 868	\$ 181	\$ 893	\$ 306
CUMULATIVE CASH SURPLUS/DEFICIT	-\$2049	-\$1181	-\$1000	-\$ 107	\$ 199