PN-ABK-372 #931-0989
ISN 35496

Bahamas Agricultural Research Training And Development Project

ECONOMIC ANALYSIS OF BEEF PRODUCTION

A.E. & R.S. BAHAMAS
FINAL REPORT NO. 15

Final Report No. 15
August 24th, 1977

Bahamas Agricultural Research
Training and Development Project

ECONOMIC ANALYSIS OF BEEF PRODUCTION ON NORTH ANDROS ISLAND, BAHAMAS

William Lazarus
Audley Greaves
Leonard Kyle
Fred A. Hughes

Bahamas Agricultural Research
Training and Development Project

W. Lazarus, A. Greaves, L. Kyle, and F. A. Hughes

Economic Analyais of Beef Production on North Andros Island, Bahamas.

One of the primary objectives of the Bahamas Agricultural Research, Training and Development Project is to develop a stable and economically viable agricultural system involving livestock on Andros Island. Increased agricultural output will provide jobs and decrease the large proportion of the food supply which must be imported annually (82 percent in 1974). Research over the past three years has shown that beef cattle can be produced. Beef imports during 1974 totaled 7,020,092 pounds. The enterprise analysis in this report is done in the context of an 80-acre family-type farm with mixed enterprises.

The cost of producing beef on Andros Island is likely to be high. The natural vegetation is not suitable for grazing, so land must be cleared and pastures must be seeded. Beef is fairly capital intensive in relation to the labor required. If the capital to set up and operate the beef enterprise is borrowed, interest and principal must be paid over the period of time required to produce market animals. This is long (over two years from breeding) in relation to other livestock or vegetable enterprises. The cost of these resources must be paid for by the livestock enterprise if the operation is to be economically successful.

By contrast, many cow-calf operations in the United States are part-time enterprises utilizing mainly surplus resources. Land unsuitable for crops is often mixed with cropland and produces enough forage to support a small beef cow herd. The land may be hilly, stony or wet enough that the forage can not be harvested in any other way. Many beef herds are operated by people with well-paying jobs off the farm. The capital for starting the herd may come from this off-farm income so that out-of-pocket

financing costs are low. Under these conditions, the beef enterprise need only cover cash costs to be successful from the operator's viewpoint.

Feeder cattle from cow-calf operations in the United States are typically finished on corn in large commercial operations utilizing considerable economies of size. More than half of all cattle are finished in operations of 1000 head or more. A farmer producing grass fed beef on Andros will be competing with imported corn fed beef produced in the United States largely under these circumstances and with grass fed beef from Australia.

Two management levels are analyzed later in this report. The first, present management, is indicative of what has been experienced on the pilot test farms. It reflects what might be expected on a small family farm during the first year of livestock production. The second, high management, reflects the most recent performance levels on the BARTAD research trials. The two levels are intended to give a range of conditions which may occur in future commercial production.

Pasture Analysis

The major cost for beef production is the feed necessary to maintain the cow herd and finish market animals. Research at BARTAD has centered on developing a pasture production system due to difficulties in feed grain production under local conditions. Hay has been made successfully while stored grass silage has not provided desirable livestock feed. Therefore, a discussion of the pasture and hay production systems is needed in analyzing the beef enterprise.

Feed requirements for livestock are expressed in production research as the carrying capacity, or the number of animals which the pasture can support or, in the case of stored feed, the pounds of dry matter required for a period of time. In a farm situation, mature cows and young stock with different feed requirements are on hand. An animal unit is a standard by which feed requirements for these animals can be compared. A cow-calf unit, or one beef cow with her offspring up to market age as

grass [illegible] 1000 pound animals makes up 1.7 animal units and requires 12,162 pounds of dry matter per year.

Table 1. Feed Requirements for Beef Cattle - Animal Unit Equivalents and Pounds Dry Matter Per Year[1]

Class of Cattle	Animal Units	Pounds D.M.[4]
Mature Cow, maintenance or gestation[2]	1.00	7,154
Mature Cow with calf, birth to 3 months	1.25	8,942
Mature Cow with calf, 3 months to weaning	1.40	10,016
Weaner calves, to 12 months	0.50	3,577
Yearlings, 12 to 17 months	0.65	4,650
Yearlings, 17 to 24 months	0.80	5,723
Cow-Calf Unit[3]	1.70	12,162

[1]From Vallentine, 1965. J. Range Mgmt. 18 (6):346

[2]Heifers 24 months and over are considered mature cows.

[3]Calculated based on 85% calf crop weaned at 6 months, steers sold at 18 months.

[4]Conversion based on 19.6 lbs. per day required for a pregnant mature cow from Morrison, Feeds and Feeding, 22nd Ed.

The critical factor in a year-round pasture operation is the carrying capacity during the dry season extending from about December to May. Forage production during these months is reduced due to periods of low rainfall and low temperatures. Carring capacity is greatly reduced if cattle are to be maintained on pasture forage during these periods.

Irrigating pastures during the dry season is one way to increase production. Research to this point in time, however, indicates that costs would be increased over non-irrigated pastures. Progress Report #18 gives a cost of $365 per year for a beef cow and calf to weaning for irrigated pasture compared to $248.20 for non-irrigated pasture. Final Report #11 gives details on irrigation procedures and costs.

The two pasture mixtures that have performed best at BARTAD and on the pilot test farms are:

1. A mixture of tropical grasses and legumes consisting of buffelgrass, rhodesgrass, greeleaf desmodium, siratro, and glycine.

2. An alfafa-buffelgrass mixture.

Tropical Grass-Legume Pasture

The tropical grass-legume mixture appears hardy under conditions on Andros. There have been no insect or disease problems requiring treatment to date. Stand life is estimated at 10 years or more. The legumes were killed out of one field on a pilot test farm where severely overgrazed by sheep.

Alfalfa - Buffelgrass Pasture

Alfalfa - buffelgrass is another pasture mixture which has worked well on the project on small plot experiments. Pure alfalfa has also been tried with good success. A mixture is more desirable in a pasture, however, so that one species can provide grazing if the other is killed out. Alfalfa has a deep root system which can reach soil moisture during the dry season. In contrast to the other species, alfalfa produces greater growth during the winter months when temperatures are low.

There have not been any livestock grazing trials on alfalfa or alfalfa-grass pastures. Thus, the performance of alfalfa under the management it will receive on a farm can only be estimated from hand-harvested research data. An alfalfa-buffelgrass pasture will require higher management than tropical grass-legume pastures. Alfalfa must be rotated on a one week grazing - 4 weeks rest period schedule for stand preservation. Some fields have been virtually destroyed in a few days time from armyworms and other insects. A leaf spot fungus has reduced yields on some alfalfa fields. Stand life is not more than 3 years under the best management. For these reasons, alfalfa will be difficult for a farmer to manage properly. It would not be advisable for a farmer to rely solely on alfalfa pastures although these might have the highest potential yield, especially if supplemental hay or silage were to be harvested for dry season feeding.

Combination of Tropical Grass-Legume and Alfalfa-Buffelgrass Pasture

The best system for a farmer to use will probably be a combination of tropical grass-legume pastures and alfalfa-buffelgrass pastures. The tropical pasture will

provide the bulk of summer grazing. The alfalfa-buffelgrass provides grazing through the dry season and be harvested as hay. The alfalfa-buffelgrass pasture would be best used for finishing livestock approaching slaughter.

Pasture Performance and Costs - Present Management

This section reflects management levels and performance on the pilot test farms from mid-1976 to the present. A tropical grass-legume mixture was planted on the first three pilot test farms which were planned for grazing livestock. The seeding was done in the fall of 1975. Establishment was slow due to low rainfall and rough soil conditions. This may have reduced yields below those obtained under more favorable conditions. Alfalfa-buffelgrass was seeded on the cattle and sheep farms in the spring of 1976 on approximately one-fourth of the pasture acreage.

Cattle, sheep and goats were placed on the first three farms at various times from July to October 1976 for a final stocking rate of 0.5 animal units per acre. The farmers were responsible for the movement of animals between fields and pasture maintenance, but close management assistance was given by project personnel. The cattle were rotated on a schedule of approximately two weeks on - 4 weeks off schedule.

The cattle were removed for one month in late January to prevent overgrazing. This may have been due to the effects of poor establishment and a highly unusual frost which temporarily stunted the tropical species.

The pasture costs under present management are based on the following assumptions:

1. A combination of one-half tropical grass-legume and one-half alfalfa-grass pasture.
2. A carrying capacity of 3.4 acres per cow-calf unit, or 3,577 pounds of utilized dry matter yield, per acre. (See Table 2).
3. Fertilizer applications near those used on the pilot test farms. Rates were about two thirds of those used on research plots. The seedings were

on newly cleared land with little natural fertility. Fertilizer required may be reduced over time as residual fertility is built up in the soil.

Pasture budgets were developed using input levels a farmer might use to get the yields given in this report. Machine costs are taken from Final Report #13 using 1977 prices for machinery. The hours of machine time are based on latest figures from the pilot test farms. Other labor includes time for filling the fertilizer spreader and miscellaneous chores. The land charge is four percent interest on land valued at $200 per acre. If the land appreciates at six percent per year, this will give a 10 percent return to the land investment. The total annual cost per acre of establishing and maintaining pasture is $220.28 per acre of $748.95 per cow-calf unit per year under present management.

Table 2. Carrying Capacity of Pastures Under Present Management

Stocking Rate in Animal Units		0.5 A.U./A.
Animal Units Per Cow-Calf Unit		1.7 A.U.
Acres Per Cow-Calf Unit - 1.7 A.U./cow-calf unit ÷ 0.5 A.U./acre	=	3.4 acres/cow-calf unit
Calculated Dry Matter Yield Per Acre - 7154 pounds/A.U. X 0.5 A.U./acre	=	3577 pounds/acre

Table 3. Cost of Producing Tropical Grass-Legume Pasture, Under Present Management,[a] Per Acre, Andros, Bahamas.

		Quantity	Price	Cost	
I. Establishment Costs					
A.	Seed - Buffelgrass	2 lbs.	$4.00	$8.00	
	Rhodesgrass	2	9.78	19.56	
	Siratro	2	2.62	5.24	
	Greenleaf Desmodium	2	4.07	8.14	
	Glycine	2	1.33	2.66	
	Total Seed				$43.60
B.	Fertilizer - 8-18-8	0.75 ton	205.00		$153.75
C.	Machine Use (includes labor)				
	Disking (twice)D-4	1.0 hr.	18.82	18.82	
	Grid Rolling D-8	0.33	60.04	19.81	
	Fertilizing JD 2030	0.15	17.84	2.68	
	Seeding JD 2030	1.2	16.36	19.64	
	Total Machine Use				$ 60.95
D.	Other Labor	0.5 hr.	2.00		$ 1.00
E.	Interest on cleared land	$200 x 4% x ½ year			$ 4.00
F.	Interest on seeding investment $263 x 12% x ½ year				$ 15.80
	Total Establishment cost				$279.10
II. Annual Maintenance Costs					
A.	Fertilizer - 0-20-15	0.5 ton	$143.04		$ 71.52
B.	Machine use (includes labor)				
	Fertilizing (twice) JD4230	0.3 hr.	17.84	$5.35	
	Clipping (3 times)JD 4230	1.5 hr.	15.52	23.28	
	Total Machine Use				$ 28.63
C.	Other Labor	1 hr.	2.00		$ 2.00
D.	Interest on cleared land	$200 x 4%			$ 8.00
E.	Interest on maintenance costs $110 x 12%				$ 13.22
	Total Annual Maintenance Cost				$123.37
III. Annual Dixed Costs					
A.	Annual establishment costs - 10 year life				$ 27.91
B.	Interest on average investment cost for establishment $279.10 x 12% x ½				$ 16.75
	Total Annual Fixed Cost				$ 44.66
IV. Total Annual Cost					$168.03

[a] Management levels that have been experienced on pilot test farms during their first year of production.

Table 4. Cost of Producing Alfalfa - Buffelgrass Pasture, Under Present Management. Per Acre, Andros, Bahamas

	Quantity	Price	Cost	
I. Establishment Costs				
A. Seed - Alfalfa	20 lbs.	$1.02	$20.40	
Buffelgrass	2 lbs.	2.76	5.52	
Total Seed				$ 25.92
B. Fertilizer - 8-18-8	0.75 ton	$205.00	$153.75	
0-46-0	0.25 ton	178.00	44.50	
Total Fertilizer				$198.25
C. Machine use (includes labor)				
Disking (twice) D-4	1.0 hr.	18.82	18.82	
Grid Rolling D-8	0.33	60.04	19.81	
Fertilizing JD 4230	0.15	17.84	2.68	
Seeding JD 2030	1.2	16.36	19.64	
Total Machine use				$ 60.95
D. Other labor	0.5 hr.	2.00		$ 1.00
E. Interest on cleared land	$200 x 4% x ½ year			$ 4.00
F. Interest on seeding investment	258 x 12% x ½ year			$ 15.49
Total establishment costs				$305.61
II. Annual Maintenance Costs				
A. Fertilizer - 0-20-15	0.4 ton	$143.04	$57.22	
0-46-0	0.125	178.00	22.25	
Total Fertilizer				$ 79.47
B. Chemicals				$ 10.00
C. Machine Use (includes labor)				
Fertilizing (twice) JD 4230	0.3 hr.	$17.84	$5.35	
Clipping (3 times) JD 4230	1.5	15.52	23.28	
Spraying (twice) JD 2030 & Myers Sprayer	1.0 hr.	16.95	16.95	
Total Machine Use				$ 45.58
D. Other labor	1.0 hr.	2.00		$ 2.00
E. Interest on Maintenance Costs	127.05 x 12%			$ 15.25
Total Annual Maintenance Cost				$152.30
III. Annual Fixed Costs				
A. Annual establishment costs - 3 year life				$101.87
B. Interest on average investment cost for establishment $306 x 12% x ½				$ 18.36
Total Annual Fixed Costs				$120.23
IV. Total Annual Cost				$272.53

Table 5. Cost of Tropical and Alfalfa-Buffelgrass Combination under Present Management, Per Acre and Per Cow-Calf Unit Andros, Bahamas

	Tropical	Alfalfa-Buffel	Combination
Establishment Cost	$279.10	$305.61	$292.36
Estimated Stand Life	10 years	3 years	
Total Annual Cost Per Acre	$168.03	$272.53	$220.28
Carrying Capacity Per Acre			0.5 A.U.
Acres Per Cow-Calf Unit	1.7 A.U./cow-calf unit ÷ 0.5 A.U./Acre		3.4 Acres
Cost Per Cow-Calf Unit			$748.95

Pasture Performance and Costs - High Management

The high management yields and costs reflect those on BARTAD research trials. High management would involve more attention to proper rotation, fertilization and maintenance of pastures. Hay would be harvested to supplement pastures during the dry season. With these practices, a carrying capacity of 1.42 acres per cow-calf units may be possible (calculated based on usable yield from Table 6 divided by feed requirements per cow-calf unit from Table 1).

Information is available from small area trials where 100 percent of pasture growth is harvested by hand, from livestock grazing trials and from hay yields. Hand harvested yields from tropical pasture mixtures in 1975 and alfalfa-buffel in 1975 & 1976 show a total yield of over 7 tons per acre, shown by quarter in Table 5. The yield harvestable by livestock or as hay is usually less due to trampling, lack of uniform stand or fertilization, and normal hay harvesting, feeding and storage losses. On a BARTAD Tropical grass-legume trial (on field 2-10c), the carrying capacity on the buffelgrass-legume treatment averaged 1.1 animal units per acre from November, 1976 to March, 1977. Based on Morrison, Feeds and Feeding, this is equal to a consumed yield of 656 pounds/acre/month (7154 pounds ÷ 12 months x 1.1). The small plot harvested yields averaged 1047 pounds/acre on the same field for the same period of time. If the Morrison values are indicative of feed requirements under Andros conditions, 63 percent of the harvested yield was consumed. Lacking a better estimate to relate small plot yields to dry matter requirements, 65 percent is used for this analysis.

hay yields have also been reduced because of a high cutting height necessary to avoid rocks. The hay needed may be reduced if forage can be left to mature and stand in the field as dry season feed. More research is necessary to determine how successful this could be. The cost of feed per year for a cow-calf unit under high management is $447.68

Table 6. Pasture Yields and Hay Requirements by Quarter Under High Management (1.3 Acres Per Cow-Calf Unit) Based on BARTAD Research Trials

	Jan - March	April - June	July- Sept.	Oct.- Dec.	Annual
	Tons Dry Matter/acre				
Alfalfa-Buffel Small Plot Yield, 1975-76	1.03	3.15	2.86	1.30	8.33
Tropical Small Plot Yield, 1975	0.59	2.45	2.04	2.19	7.27
Average - ½ Alf.-Buffel, ½ Tropical	0.81	2.80	2.45	1.74	7.80
Utilization by Livestock		65% of small plot yield			
Usable Yield	0.53	1.82	1.60	1.13	5.08
Quarterly Requirement 1.42 A.U./A. x 1788 lb./quarter ÷ 2000 lb	1.27	1.27	1.27	1.27	5.08
Surplus or Drficit to be supplied by Hay	-0.74	0.55	0.33	-0.14	
Total Dry Matter Required as Hay Per Acre				0.88 ton	
Per Cow-Calf Unit (1.2 Acres Per Cow-Calf Unit)				1.05 ton	

Table 7. Cost of Producing Tropical Grass-Legume Pasture Under High Management Per Acre, Andros, Bahamas.

	Quantity	Price	Cost	
I. Establishment Costs				
A. Present mgt. costs less fertilizer and seeding interest (items B & F, Table 3)			$109.55	
B. Fertilizer	1.0 ton	$205.00	205.00	
C. Interest on seeding investment	$314.55 x 12% x ½		18.87	
Total Establishment Cost				$333.42
II. Annual Maintenance Costs				
A. Present mgt. costs less fertilizer and maintenance interest			$ 38.63	
B. Fertilizer 0-20-15	1.0 ton	$143.04	$143.04	
C. Interest on Maintenance Costs	181.67 x 12%		21.80	
Total Annual Maintenance Costs				$203.47
III. Annual Fixed Costs				
A. Annual establishment costs - 10 year life			$ 33.34	
B. Interest on average investment cost for establishment 333.42 x 12% x ½			20.00	
Total Annual Fixed Cost				$ 53.34
IV. Total Annual Cost				$256.31

Table 8. Cost of Producing Alfalfa-Buffelgrass Pastures Under High Management, Per Acre, Andros, Bahamas.

	Quantity	Price	Cost	
I. Establishment Costs				
A. Present mgt. costs less fertilizer and seeding interest (same as average management)			$91.87	
B. Fertilizer - 8-18-8	1.0 ton	$205.00	205.00	
0-46-0	0.25 ton	178.00	44.50	
C. Interest on seeding investment	350.37 x 12% x ½		21.02	
Total Establishment Cost				$362.39
II. Annual Maintenance Costs				
A. Present mgt. costs less fertilizer & maintenance interest			$57.58	
B. Fertilizer - 0-20-15	0.5 ton	$143.04	71.52	
0-46-0	0.25 ton	178.00	44.50	
C. Interest on maintenance costs	173.60 x 12%		20.83	
Total Annual Maintenance Costs				$194.43
III. Annual Fixed Costs				
A. Annual establishment costs - 3 year life			$120.80	
B. Interest on average investment cost for establishment 362.39 x 12% x ½			21.74	
Total Annual Fixed Cost				$142.54
IV. Total Annual Cost				$336.97

Table 9. Cost of Harvesting, Storing and Feeding Hay from Surplus Pasture, BARTAD, Per Ton

I. Harvesting Cost	Quantity	Price	Cost
Mower-conditioner	.53 hrs/Ac.	$13.76	$7.29
Rake (twice)	.61	3.58	2.18
Baler	.51	6.70	3.42
Tractor Cost for Mowing, Raking & Baling	1.65	10.29	16.98
Labor for loading hay on wagons & stacking into storage[a]	2.04	2.00	4.08
Total Cost Per Acre Harvested, Per Cutting			$33.95

[a] Assumes 2 men to stack hay on wagon behind baler and 2 men to unload wagons into storage while baling. Machine operator labor costs are included in tractor price.

Harvesting cost per ton $33.95 ÷ 0.5 ton/A.	$67.90 per ton
Storage cost per ton	10.
Feeding cost per ton (5 feedings of 400 pounds each, ½ hour per feeding) 2½ hours per ton @ $2.00	5
Total Cost per ton	$82.90

Table 10. Cost of Tropical and Alfalfa-Buffelgrass Combination, under High Management Per Acre and Per Cow-Calf Unit, Andros, Bahamas

	Tropical	Alfalfa-Buffel	Combination
Establishment Cost	333.42	362.39	347.90
Estimated Stand Life	10 years	3 years	
Total Annual Cost-Pasture	256.81	336.97	296.89
Carrying Capacity Per Acre	1.42 Animal Units		
Cost for Pasture, Per Cow-Calf Unit			356.27
Acres Per Cow-Calf Unit	1.7 A.U. ÷ 1.42 A.U. per Acre =		1.2 Acres
Hay Harvesting, Storing and Feeding Cost	1.05 ton @ $82.90		87.04
Total Cost Per Cow-Calf Unit			443.31

Capital Investment and Annual Fixed Costs

A Bahamian farmer starting in the beef business with 20 cows and grass feeding calves to finished weights with an all pasture system of 70 acres would make an initial investment of $23,407 in fencing, equipment and cattle (Table 10).

Fences are a major cost item when pastures are divided for rotational grazing. Using rock windrows instead of fences would reduce costs, but this has not been successful so far on the pilot test farms. The cost of fencing is $.75 per foot including labor. A farmer could reduce his cash costs by building fences himself. He would then have an opportunity cost for his labor, which may or may not be less than hired labor costs. Fencing requirements to divide 70 acres of pasture into 6 fields are 12,000 feet.

Table 11. Initial Investment and Annual Fixed Costs for Fences, Equipment and Cattle 20 cow-herd, Andros, Bahamas

	New Cost	Expected Life	Annual Fixed Costs Depr.	Interest	Repairs	Total
I. Fences (12,000 feet)	$9000	10	$900	$540	$180	$1620.00
Per Cow	450					81.00
II. Equipment						
A. Gates (10) @ $64	640	10	64	37	13	114
B. Mineral Feeder	65	10	6	4	1	11
C. Watering Troughs (6) @ $82	492	10	49	30	10	89
D. Wells (4) @ $120	480	20	24	29	9	62
E. Hand Pump	30	10	2	1		6
Total Equipment	$1,707		$146	$102	$34	$282
Per Cow	85.35					14.10

III. Cattle	New Cost	Expected Life	Annual Fixed Costs Depr.	Interest	Repairs	Total
A. Cows (20) @ $400	$8000	7	-	$960	-	$960
B. Heifers, 1 yr. (3) @ $400	1200	9	-	144	-	144
C. Steers (14) @ $250	3500	-	-	420	-	420
Total Cattle	$12700			$1524		$1524
Per Cow	635					76.20

Data in Tables 11 and 12 are compilations of costs and returns for a cow calf to grass finishing operation under two management levels. The only difference between management levels is the carrying capacity of the pastures. Hay is made from excess pasture to increase carrying capacity under the high management system. Some data is taken from the BARTAD Project while other data is estimated from the United States.

Beef Budget Under Present Management

Cattle have been sold on the local Andros market at prices of $60 to $75 per hundredweight, live weight basis. The cattle were picked up at the project so there was no marketing cost. A transportation cost will be incurred if livestock are transported to Nassau for slaughter and sale. The Nassau price in March, 1977 averaged $.53 per pound live weight, computed from dressed weight prices at the abbatoir.

Finished cattle (grass fed) are marketed at 1000 pounds. A weaning percentage of 85 percent is slightly above the United States figure for average management. Eighty six percent of the weaned cattle are sold with the rest held for replacements. An increase in the price of beef to $1.30 per pound would be required to cover all costs and give $2 per hour return to labor and management.

Operating costs are based on United States figures adapted to Bahamian conditions. The only feed costs are for pasture. Pasture costs at $748.95 are over 75 percent of the total costs of $951.25. At a total income of $589.74, there is a loss per cow of $-361.51 not including any labor costs. Pasture costs would have to be reduced to $387. to give a positive return over all costs. Carrying capacity would have to be more than doubled for this to be done.

The fixed costs are interest and depreciation on fences and equipment, and interest on cattle for a total of $171.30. Many local farmers would have to borrow money to buy these items, in which case interest becomes a cash cost. If the farmer doesn't have money borrowed, then interest becomes an opportunity cost and must be considered, since he could invest his money elsewhere.

Table 12 Beef Budget Under Present Management (3.4 Acres Per Cow-Calf Unit) Per Year

I. Income		
A. Sale of Finished Cattle .99 x 1000 lbs. x 85% weaned x 86% saleable x $70/cwt.[a]	$506.58	
B. Sale of Cull Cow .99 x 1000 lbs. x 14% x $60/cwt.	83.16	
Total		$589.74
II. Expenses		
A. Variable		
1. Operating		
a. Breeding	$ 10.00	
b. Veterinary & Drugs	10.00	
c. Minerals & Salt	6.00	
d. Supplies	5.00	
Total Operating		$ 31.00
2. Pasture (from Table 4) 3.4 Acres		$748.95
Total Variable Costs		$779.95
Return Over Variable Costs		$-190.21
B. Fixed (from Table 10)		
1. Depreciation, Interest and Repairs on Fences		$ 81.00
2. Depreciation, Interest and Repairs on Equipment		$ 14.10
3. Interest on Investment in Cattle		$ 76.20
Total Fixed Costs		$171.30
Total Costs (except labor)		$951.25
III. Return to Labor & Management		$-361.51

IV. Labor Requirements

Total	JFM	AMJ	JAS	OND
32	11	7	6	8

[a] Price if marketed on Andros. If marketed in Nassau, price will be $55 to $60 per cwt. based on 1977 prices and transportation costs would have to be added.

Table 13. Beef Budget Under High Management (1.2 Acres Per Cow-Calf Unit)

		Per Year
I. Income		$589.74
II. Expenses		
A. Variable		
1. Operating		31.00
2. Feed (from Table 9)		
a. Pasture 1.2 Acres	$356.27	
b. Hay 1.05 Ton @ $82.90	87.04	
Total Feed		$443.31
Total Variable Costs		$474.31
Return Over Variable Costs		$115.43
B. Fixed (from Table 10)		$171.30
Total Costs (except labor)		$651.27
III. Return to Labor & Management		$-55.87

IV. Labor Requirements

Total	JFM	AMJ	JAS	OND
32	11	7	6	8

Beef Budget Under High Management

With the carrying capacity of pastures increased to those obtained in the latest research trials, feed costs are reduced to $443.31, giving a positive return over variable costs of $115.43 and reducing the loss over all costs except labor to $-55.87 per cow-calf unit. Under high management, and with continued improvement in yields or reduction in fertilizer requirements on pastures, the beef enterprise may be marginally profitable.

Subsidized Initial Investment

One way to encourage beef production would be to provide the initial investment in cleared land, pasture seeding, and fencing to the farmer at no cost. He would then only have to cover operating and pasture maintenance expenses and provide the investment in cattle. Under this situation the return to labor and management would be $13.90 per cow under present management and $156.76 under high management.

SUMMARY

Research at BARTAD has shown that beef production is possible on Andros. Performance has been increasing every year and a high production level can be obtained with adequate management. Some workers at BARTAD with lengthy experience with cattle do work well with beef cattle as well as with other livestock. However, management of beef cattle has proven difficult to local farmers due to lack of familiarity with livestock.

Profitable production by the average farmer, at performance levels on the pilot test farms and including all costs, is extremely doubtful. This is due mainly to the high cost of establishing and maintaining pastures and low carrying capacity during the dry season. At high management levels, which may not be attainable by local farmers, income will come close to being profitable over all costs except labor. Some subsidization of initial investments by the government, or some mechanism for increasing the market price, may make the beef profitable at lower management levels.

RECOMMENDATIONS

Increased local production of meat would reduce the dependence on foreign food sources. In light of this fact, certain actions could be taken to enable local farmers to operate a profitable beef enterprise.

1. Continue efforts to determine how much fertilizer requirements decrease as the land is in pasture for longer periods of time and whether irrigation costs can be decreased.

2. Consider larger scale beef production units (200 cows or more) which might allow some reductions in costs such as fencing and might make operations such as hay harvesting more efficient.

3. Provide all of the major investments such as land clearing, fencing, pasture establishment and possibly the initial breeding herd free to the farmer. Close supervision would be necessary to prevent these resources from being used for other purposes.

4. Subsidize the price of beef at a level which would give a reasonable return to labor and management to the farmer. Alternatively introduce an import tax or quota system to raise the price of imported beef to a level where the local farmer could compete.