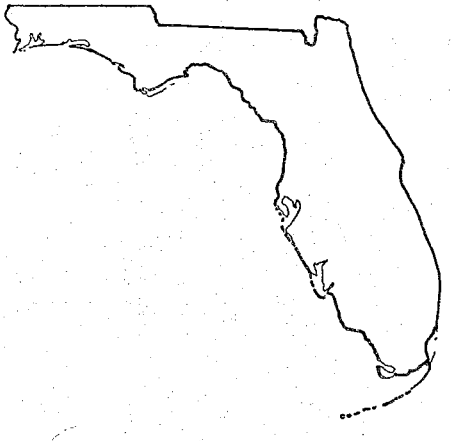
F.L

Rigoberto A. Lopez
Jose Alvarez
Gerald Kidder

Economic Information
Report 119

# Enterprise Budget for Sugarcane Production in South Florida 1978-79





Food and Resource Economics Department
Agricultural Experiment Stations and
Cooperative Extension Service
Institute of Food and Agricultural Sciences
University of Florida, Gainesville

September 1979

ABSTRACT

An enterprise budget for sugarcane production in south Florida during the 1978-79 season was developed from data provided by local producers. An efficient 640-acre farm was assumed. Results show a cost per net ton of sugarcane of $18.12, and of $16.64 per net standard ton. Costs per gross, net and harvested acre were $466, $518 and $690, respectively. Net returns to management and risk were $37 per acre.

Key words: Everglades, sugarcane, enterprise budget, production costs.

---

TABLE OF CONTENTS

LIST OF TABLES

# ENTERPRISE BUDGET FOR SUGARCANE PRODUCTION IN SOUTH FLORIDA, 1978-79

Rigoberto A. Lopez, Jose Alvarez and Gerald Kidder

## INTRODUCTION

Sugarcane production is the most important segment of the agricultural economy of the Lake Okeechobee region of south Florida. In a recent study [4] it was estimated that the sugarcane production and processing sectors provided approximately 12 percent of local employment and 8 percent of local gross output. A detailed budget for this important crop was published in 1972 [6] and updated in 1976 [3], and an industry-wide cost study was published in 1977 [2]. Inflation and changing agricultural practices have made the published values obsolete. The purpose of this study is to update the budget figures for Florida sugarcane.

An enterprise budget is a systematic listing of income, expenses, capital, labor, and machinery requirements for a given crop. Enterprise budgets have several important applications. Sugarcane producers may use current budgets to gauge their costs and practices against the model farm. Budgets allow comparison of production costs and revenue between different regions of the country and between crops in the same region. Since enterprise budgets are useful in land appraisals, the value of agricultural land is closely related to the potential net revenue from the crop being produced on that land. Finally, published

---

RIGOBERTO A. LOPEZ is Research Assistant, Food and Resource Economics Department, University of Florida. JOSE ALVAREZ and GERALD KIDDER are Area Economist and Extension Sugarcane Specialist, respectively, University of Florida, Agricultural Research and Education Center, Belle Glade. The authors thank the sugarcane growers and local dealers who provided the data needed for conducting this study.

budgets document costs for historical purposes and serve as a ready reference to those requiring general economic statistics on the crop in question.

The present study was performed in early 1979 and reflected the costs of agricultural practices common in the sugarcane growing region of south Florida during the 1978-79 season. Detailed discussion of the data was not included since the purpose of the study was to update previously published budget figures and to express the results in forms convenient to the assorted needs of the users.

## ASSUMPTIONS OF THE STUDY

Many variables influence sugarcane production in south Florida. Variations in management, size of farm, soils, and all other factors affecting production, result in different systems of production with corresponding input and output levels. Budgeting a sugarcane operation thus requires the stating of several assumptions.

### Management

This study assumes: a) a high level of farm management, b) the manager is a profit maximizer, c) use of the latest technology, and d) the operator is either an independent producer or a mill coop member, but is not a grower-processor.

### Farm Characteristics

Sugarcane farms in south Florida vary in size from small, owner-operated to large, corporate-run farms. In this study, a 640-acre (one section) farm is assumed. Since the per-acre cost and yield figures obtained are considered representative of the best managed farms in the region, larger operations can use multiples of the basic unit.

The farm assumed is already established and its land subdivided into 16, 40-acre blocks. The land is distributed as shown in Table 1. There are 14 one-half mile long field ditches (7 miles total) and

2 one-mile long seepage canals. The farm is assumed to be located less than 15 miles from the mill, thus no extra charges for transportation of cane to the mill are made.

### Machinery and Equipment

The machinery and equipment assumed (Table 2) can perform all necessary operations in the time required and is efficiently used. Equipment usage time is assumed to be 90 percent of tractor time, allowing for time lost in activities such as refueling, etc.

### Labor

The farm has one full-time employee. Outside labor as well as custom services are assumed to be available in the area when needed.

### Yields and Prices

Yields of 50, 38 and 30 gross tons per acre and sucrose contents of 14.5, 13.5 and 13 percent (normal juice sucrose) are assumed for plant, first ratoon and second ratoon cane, respectively. For seed cane, a 48 gross ton yield is assumed. Prices assumed for inputs were obtained from local businesses. Guidelines for computing prices of output were given by a local processor and are contained in The United States Sugar Program [5]. Although the Sugar Act expired at the end of 1974, its principles are still generally used for determining methods of payment to growers.

## METHODOLOGY

### Data Sources

Data for activities performed and equipment used were obtained through personal interviews with producers. Prices of inputs were provided by local companies servicing the growers.

## Calculation of Costs

In Table 3 are listed all the activities performed in producing sugarcane on the model farm, along with the machinery and equipment needed. Typical machinery and equipment usage was then determined and the fixed and variable costs computed (Table 2). Variable costs per hour were then used to complete the cost section of Table 3. Detailed discussion of Table 3 is omitted because, along with the footnotes contained, it is self-explanatory.

## Total Variable Costs

Variable costs are the costs that may be changed during the production period by producing more or less of a product or using more or less of a resource. Besides the costs incurred in different activities, labor benefits, miscellaneous costs, and interest on the investment are also included.

## Total Fixed Costs

Fixed costs are those that cannot be changed during the production period; they must be paid whether production takes place or not. Fixed costs in cane production are those associated with owning machinery and equipment, land charges, and land and drainage district taxes. Machinery and equipment costs are listed in Table 3, the land charge corresponds to a typical cash rent in the area [2], and typical taxes were obtained from the interviews.

## Calculation of Revenues

Revenues to the cane producer include the opportunity cost of the seed cane he produced, the sugarcane sold to the mill, and the molasses payment. Since most producers are paid in terms of net standard tons, the gross tons delivered to the mill must be converted to net standard tons as follows:

(1 - % trash) x (gross tons) = net tons

(Net tons) x (quality factor) = net standard tons

For example, plant cane assumed to yield 50 gross tons of sugarcane and 14.5 percent of sucrose in normal juice. Since the cane was hand harvested (70 percent of the cane in south Florida is harvested by hand), a 3 percent trash content is assumed:

(1 - 0.03) x (50 gross tons) = 48.5 net tons

(48.5 net tons) x (1.2002) = 58.20 net standard tons cane

where the quality factor is determined from Table 4. The price of $17.22 per standard ton is arrived at by multiplying the loan price basis of $14.98 times 1.15, the government's fair price determination factor intended to adjust the sharing ratio between producers and processors.

The molasses payment is calculated as follows:

| | |
|---|---|
| 1978-79 average price of molasses | 19.52 ¢/gal |
| Less fair price adjustment | 4.75 |
| Basic price for settlement | 14.77 |
| Less 50% for mill processing | 7.38 |
| Established price paid to growers | 7.39 ¢/gal |
| Times mill historical average yield (since 1975) | x6.2 gal/net ton cane |
| Molasses payment to cane grower | 45.8 ¢/net ton cane |

## COSTS AND RETURNS

In Table 5 are summarized the costs and returns per acre as well as for the entire 640-acre model farm. Since there is frequently need to know average cost per net ton, per net standard ton, and per acre, the budget was also used to determine these production costs.

### Cost Per Net Ton

The calculation of average cost per net ton is demonstrated below.

| (Gross tons/acre) | | - (3% trash) | = (Net tons/acre) | x (Acres) | = (Net tons) |
|---|---|---|---|---|---|
| Seed cane | 48 | 1.44 | 46.56 | 12 | 560 |
| Plant cane | 50 | 1.50 | 48.50 | 132 | 6,400 |
| 1st ratoon cane | 38 | 1.14 | 36.86 | 144 | 5,310 |
| 2nd ratoon cane | 30 | 0.90 | 29.10 | 144 | 4,190 |
| | | | | | 16,460 |

Dividing total costs of $298,210 (Table 5, variable plus fixed) by total net tons of 16,460 gives a total cost of $18.12 per net ton of cane produced.

Cost Per Net Standard Ton

The same procedure is used to determine the cost per net standard ton. Total net standard tons are computed as follows:

| | (Net tons/acre) | x (Quality factor) | = (Net std. tons/acre | x (Acres) | = (Net std. tons) |
|---|---|---|---|---|---|
| Plant cane | 48.50 | 1.2001 | 58.20 | 132 | 7,680 |
| 1st ratoon cane | 36.86 | 1.1004 | 40.54 | 144 | 5,840 |
| 2nd ratoon cane | 29.10 | 1.0505 | 30.55 | 144 | 4,400 |
| | | | | | 17,920 |

Dividing the $298,210 total cost figure by total net standard tons results in a total cost of $16.64 per net standard ton.

Costs Per Acre

Per acre costs can be computed considering gross, net and harvested acreage. Gross acreage is the total farm acreage. Net acreage is total acreage minus roads, ditches and canals. Harvested acreage is the net acreage minus acreage fallowed. Dividing total costs by 640 acres gives a cost per gross acre of $466. Since net acreage equals 576, $518 is the cost per net acre. Dividing by the 432 harvested acres results in a cost of $690 per harvested acre.

Returns Per Acre

The returns to various factors of production are presented in Table 6. The break-down facilitates the estimation of the value of the resources used in sugarcane production. If land, management and risk are considered as the residual claimants (or unpaid factors of production), the net returns per acre are $127. If only management and risk are left out, returns are $37 per gross acre.

## SENSITIVITY OF COSTS AND RETURNS

There are important qualifiers to the results that need to be pointed out. In general, yields, product prices and input costs are pretty much the same across the area. In the case of fuel and petroleum-based products, costs will increase next year due to the recent price increase.

One item that deserves special consideration is the land charge. A $90 per acre cash rent was assumed in this study since it represents an average for the area. Variations in this charge will have a significant impact on the cost and return figures.

On the revenue side, the possibility of growing one or two crops of rice or one crop of field corn during the fallow period greatly enhances the possibility of increasing net returns. These rotations have become quite popular in recent years.

## SUMMARY AND CONCLUSIONS

Costs and returns figures for sugarcane production in south Florida were updated based on 1978-79 figures. Results show that, under the conditions assumed in this study, it cost about $18.12 per net ton and $16.64 per net standard ton to produce cane in Florida in the 1978-79 season. Costs per gross, net and harvested acre were $466, $518 and $690, respectively. Return to management and risk were about $37 per acre. Variation in any one of an array of factors can significantly change these figures.

Table 1.--Land use distribution of the assumed 640-acre sugarcane farm in south Florida

| Land use | Acres | Percent |
|---|---|---|
| Road, ditches and canals | 64 | 10.0 |
| Seed cane | 12 | 1.9 |
| Plant cane | 132 | 20.6 |
| 1st ratoon | 144 | 22.5 |
| 2nd ratoon | 144 | 22.5 |
| Fallow | 144 | 22.5 |
| Total | 640 | 100.0 |

Table 2.--Estimated initial investment and annual and hourly operating costs of machinery and equipment used on a 640-acre sugarcane farm in south Florida, 1978-79

| Item | Initial list price | New purchase price[a] | Years owned | Salvage value[b] | Annual usage | Fixed cost[c] | | Variable cost/hr.[d] |
|---|---|---|---|---|---|---|---|---|
| | | | | | | Annual | Per gross acre | |
| | -----Dollars----- | | | Dollars | -Hrs.- | ---------- Dollars ---------- | | |
| Tractor, 110 HP | 22,500 | 20,250 | 10 | 6,644 | 560 | 2,908 | 4.54 | 4.92 |
| Tractor, 60 HP | 12,500 | 11,250 | 10 | 3,691 | 566 | 1,615 | 2.52 | 2.54 |
| Tractor, 60 HP | 12,500 | 11,250 | 10 | 3,691 | 566 | 1,615 | 2.52 | 2.54 |
| Disk, offset, 12', 24" | 6,000 | 5,400 | 10 | 1,061 | 116 | 811 | 1.27 | 2.09 |
| Disk, harrow, 21', 21" | 5,200 | 4,680 | 10 | 919 | 190 | 703 | 1.10 | 2.05 |
| Chisel plow, 12', 20" | 1,600 | 1,440 | 10 | 283 | 51 | 216 | 0.34 | 0.43 |
| Land leveler, 8-row, 30" | 4,900 | 4,410 | 10 | 866 | 58 | 662 | 1.03 | 0.93 |
| Mole drain | 1,550 | 1,395 | 10 | 274 | 20 | 209 | 0.33 | 0.31 |
| Furrow plow, 3-row | 1,500 | 1,350 | 10 | 265 | 26 | 203 | 0.32 | 0.33 |
| Covering rig | 2,500 | 2,250 | 10 | 442 | 52 | 338 | 0.53 | 0.68 |
| Scratcher, 3-row | 2,000 | 1,800 | 10 | 354 | 303 | 270 | 0.42 | 0.93 |
| Rolling cultivator | 1,500 | 1,350 | 10 | 265 | 520 | 203 | 0.32 | 0.71 |
| Rotary mower, 7' | 1,700 | 1,530 | 10 | 300 | 45 | 230 | 0.36 | 0.44 |
| Disk, 8', 24" | 2,480 | 2,232 | 10 | 438 | 144 | 335 | 0.52 | 0.92 |
| Pick-up truck | 7,800 | 7,020 | 10 | 1,380 | 400 | 1,054 | 1.65 | 4.76 |
| Pump, 36" pipe, 92 HP | 17,000 | 15,300 | 10 | 3,000 | 500 | 2,298 | 3.59 | 1.78 |
| Total | | | | | | 13,670 | 21.36 | |

[a]At 90% of initial list price.

[b]Computed with the formula given in [7].

[c]Includes straight line depreciation; interest on average investment at 10% calculated by adding purchase price to salvage value divided by two; taxes and insurance at 1% of purchase price.

[d]Calculated from [1] for the fifth year to reflect average variable costs over the ten year period.

Table 3.--Total costs of different activities performed on a 640-acre sugarcane farm in south Florida, 1978-79

| Activity and equipment | Acres per day[a] | Hrs. per acre | Cost per hr. | Number acres per yr. | Times over | Amount | Total |
|---|---|---|---|---|---|---|---|
| | | | ---$--- | | | ---- Dollars ---- | |
| I-LAND PREPARATION | | | | | | | |
| Heavy disking (offset) | 45 | | | 144 | 4 | | |
| 110 HP tractor | | 0.22 | 4.92 | | | 623 | |
| 24" disk 12' wide | | 0.20 | 2.09 | | | 241 | |
| Operator | | 0.22 | 3.60 | | | 456 | |
| Total | | | | | | 1,320 | |
| Light disking (harrow) | 75 | | | 144 | 10 | | |
| 110 HP tractor | | 0.13 | 4.92 | | | 921 | |
| 21" disk 21' wide | | 0.12 | 2.05 | | | 354 | |
| Operator | | 0.13 | 3.60 | | | 674 | |
| Total | | | | | | 1,949 | |
| Chiseling[b] | 40 | | | 77 | 1 | | |
| 110 HP tractor | | 0.25 | 4.92 | | | 95 | |
| 12' chisel plow, 20" deep | | 0.23 | 0.43 | | | 8 | |
| Operator | | 0.25 | 3.60 | | | 69 | |
| Total | | | | | | 172 | |
| Ditch cleaning[c] | | | | | | | |
| Custom hired | | | | | | 875 | |

Continued

Table 3.--Total costs of different activities performed on a 640-acre sugarcane farm in south Florida, 1978-79--Continued

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Leveling | 45 | | | 144 | 2 | | |
| 110 HP tractor | | 0.22 | 4.92 | | | 312 | |
| 8-row leveler, 30" | | 0.20 | 0.93 | | | 54 | |
| Operator | | 0.22 | 3.60 | | | 228 | |
| Total | | | | | | 594 | |
| Mole draining[d] | 36 | | | 77 | 1 | | |
| 110 HP tractor | | 0.28 | 4.92 | | | 106 | |
| Mole drain | | 0.25 | 0.31 | | | 6 | |
| Operator | | 0.28 | 3.60 | | | 78 | |
| Total | | | | | | 190 | |
| Fertilization[e] | | | | 144 | 1 | | |
| Fertilizer | | | | | | 3,960 | |
| Custom application | | | | | | 252 | |
| Incorporation: | 75 | | | | 1 | | |
| 110 HP tractor | | 0.13 | 4.92 | | | 92 | |
| 21" disk 21' wide | | 0.12 | 2.05 | | | 35 | |
| Operator | | 0.13 | 3.60 | | | 67 | |
| Total | | | | | | 4,406 | 9,506 |
| II-PLANTING | | | | | | | |
| Furrowing | 50 | | | 144 | 1 | | |
| 110 HP tractor | | 0.20 | 4.92 | | | 142 | |
| 3-row furrower | | 0.18 | 0.33 | | | 9 | |
| Operator | | 0.20 | 3.60 | | | 104 | |
| Total | | | | | | 255 | |

Continued

Table 3.--Total costs of different activities performed on a 640-acre sugarcane farm in south Florida, 1978-79--Continued

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Cutting cane | | | | | | | |
| Custom hired[f] | | | | 12 | | 2,765 | |
| Seed cost[g] | | | | | | 11,520 | |
| Loading, hauling, dropping | | | | | | | |
| Custom hired[h] | | | | 144 | | 12,600 | |
| Total | | | | | | 26,885 | |
| Seed covering and insect. appl. | 25 | | | 144 | 1 | | |
| 110 HP tractor | | 0.40 | 4.92 | | | 283 | |
| Covering rig | | 0.36 | 0.68 | | | 35 | |
| Operator | | 0.40 | 3.60 | | | 207 | |
| Insecticide[i] | | | | | | 1,901 | |
| Total | | | | | | 2,426 | 29,566 |
| III-PLANT CANE CULTIVATING | | | | | | | |
| Scratching | 60 | | | 144 | 14 | | |
| 60 HP tractor | | 0.17 | 2.54 | | | 871 | |
| 3-row scratcher | | 0.15 | 0.93 | | | 281 | |
| Operator | | 0.17 | 3.60 | | | 1,234 | |
| Total | | | | | | 2,386 | |
| Mechanical cultivation | 50 | | | 144 | 8 | | |
| 60 HP tractor | | 0.20 | 2.54 | | | 585 | |
| Rolling cult. | | 0.18 | 0.71 | | | 147 | |
| Operator | | 0.20 | 3.60 | | | 829 | |
| Total | | | | | | 1,561 | |

Continued

Table 3.--Total costs of different activities performed on a 640-acre sugarcane farm in south Florida, 1978-79--Continued

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Herbicide application[j] | | | | 144 | 1 | | |
| Custom hired airplane | | | | | | 238 | |
| Materials | | | | | | 815 | |
| Total | | | | | | 1,053 | 5,000 |
| IV-STUBBLE CANE CULTIVATING | | | | | | | |
| Spreading fodder | 36 | | | 144 | 1 | | |
| 60 HP tractor | | 0.28 | 2.54 | | | 102 | |
| 7' rotary mower | | 0.25 | 0.44 | | | 16 | |
| Operator | | 0.28 | 3.60 | | | 145 | |
| Total | | | | | | 263 | |
| Disk cultivation | 36 | | | 288 | 2 | | |
| 60 HP tractor | | 0.28 | 2.54 | | | 410 | |
| 24" disk 8' wide | | 0.25 | 0.92 | | | 132 | |
| Operator | | 0.28 | 3.60 | | | 581 | |
| Total | | | | | | 1,123 | |
| Rolling cultivation | 36 | | | 288 | 6 | | |
| 60 HP tractor | | 0.20 | 2.54 | | | 878 | |
| Rolling cult. | | 0.18 | 0.71 | | | 221 | |
| Operator | | 0.20 | 3.60 | | | 1,244 | |
| Total | | | | | | 2,343 | |
| Fertilization[k] | | | | 288 | 1 | | |
| Custom appl. | | | | | | 504 | |
| Materials | | | | | | 6,840 | |
| Total | | | | | | 7,344 | |

Continued

Table 3.--Total costs of different activities performed on a 640-acre sugarcane farm in south Florida, 1978-79--Continued

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Herbicide application[j] | | | | 288 | 1 | | |
| Custom hired airplane | | | | | | 475 | |
| Materials | | | | | | 1,630 | |
| Total | | | | | | 2,105 | |
| Chiseling[b] | 40 | | | 144 | 1 | | |
| 110 HP tractor | | 0.25 | 4.92 | | | 177 | |
| 12' chisel plow, 20" deep | | 0.23 | 0.43 | | | 14 | |
| Operator | | 0.25 | 3.60 | | | 130 | |
| Total | | | | | | 321 | 13,499 |
| V-HARVESTING[l] | | | | | | | |
| Plant cane | | | | 132 | 1 | 56,100 | |
| 1st ratoon cane | | | | 144 | 1 | 46,512 | |
| 2nd ratoon cane | | | | 144 | 1 | 36,720 | |
| Total | | | | | | | 139,332 |
| VI-OVERHEAD ACTIVITIES | | | | | | | |
| Edging | 640 | | | 640 | 1 | | |
| 60 HP tractor | | 0.016 | 2.54 | | | 26 | |
| Rotary mower | | 0.014 | 0.44 | | | 4 | |
| Operator | | 0.016 | 3.60 | | | 37 | |
| Total | | | | | | 67 | |

Continued

Table 3.--Total costs of different activities performed on a 640-acre sugarcane farm in south Florida, 1978-79--Continued

| | | | | |
|---|---|---|---|---|
| Rodent control[m] | 432 | 1 | | |
| Custom hired airplane | | | 648 | |
| Materials | | | 1,080 | |
| Total | | | 1,728 | |
| Borer control[n] | | | | |
| Scouting | 432 | | 1,080 | |
| Custom hired | 144 | | 1,477 | |
| Total | | | 2,557 | |
| Water control | | | | |
| Pump 36" pipe | | | 890 | |
| Labor[o] | | | 360 | |
| Total | | | 1,250 | 5,602 |

[a]A day is assumed to be 10 hrs. for labor and tractor and 9 hrs. for other machinery and equipment.

[b]Only to about half of the land due to variations in soil depth.

[c]Includes soil spreading and is done only to plant cane, 2.5 miles at $350/mile.

[d]One 10" diameter mole plow pulled 2' deep every 20'.

[e]500 lbs. of 0-10-40 plus micronutrients applied broadcast, at $110/ton of material and $7/ton for application.

[f]Twelve acres of seed cane with a 48 ton yield at $4.80/harvested ton. The 576 tons are planted in 144 acres at 4 tons per acre.

Continued

Table 3.--Total costs of different activities performed on a 640-acre sugarcane farm in south Florida, 1978-79--Continued

[g] At $20/ton.

[h] At $87.50/acre.

[i] 40 lbs. of Furadan/acre at $0.33/lb.

[j] ¼ gal. of 2,4-D/A at $4.25/gal. plus 2 lbs. of Atrazine/A at $2.00/lb. plus surfactant at $6/gal. (0.5% of sprayed volume). $1.65/A for the airplane.

[k] 500 lbs./A of 0-10-40 without micronutrients, custom applied at $95/T for material and $7/ton for application.

[l] Custom hired, at $8.50 per gross ton, assuming yields of 50, 38 and 30 gross tons per acre for plant cane, first and second ratoon, respectively.

[m] 10 lb./A of zinc phosphide at $0.25/lb., $1.50/A for the airplane.

[n] Charges for scouting are $2.50 per acre for the season for 432 acres. Assumes two applications to 144 acres. Each chemical application costs an average of $5.13 per acre and includes 1¼ pint of Azodrin 5WM and the aircraft cost.

[o] 100 hrs./year @ $3.60/hr.

Table 4.--Standard quality factor for converting net tons of cane to standard tons of cane, by various measures of sugar quality

| For sugar quality expressed as: | | | Multiply net tons per acre by |
|---|---|---|---|
| Percent Sucrose in normal juice[a] | Percent Sugar in cane[b] | Pounds sugar per ton of cane[c] | |
| 11.57 | 8.25 | 165 | .9079 |
| 11.84 | 8.50 | 170 | .9348 |
| 12.11 | 8.75 | 175 | .9617 |
| 12.38 | 9.00 | 180 | .9887 |
| 12.65 | 9.25 | 185 | 1.0156 |
| 12.92 | 9.50 | 190 | 1.0425 |
| 13.19 | 9.75 | 195 | 1.0695 |
| 13.46 | 10.00 | 200 | 1.0964 |
| 13.73 | 10.25 | 205 | 1.1233 |
| 14.00 | 10.50 | 210 | 1.1502 |
| 14.27 | 10.75 | 215 | 1.1772 |
| 14.54 | 11.00 | 220 | 1.2041 |
| 14.81 | 11.25 | 225 | 1.2310 |
| 15.08 | 11.50 | 230 | 1.2580 |
| 15.34 | 11.75 | 235 | 1.2849 |
| 15.61 | 12.00 | 240 | 1.3118 |
| 15.88 | 12.25 | 245 | 1.3387 |
| 16.15 | 12.50 | 250 | 1.3657 |
| 16.42 | 12.75 | 255 | 1.3926 |
| 16.69 | 13.00 | 260 | 1.4195 |
| 16.96 | 13.25 | 265 | 1.4465 |
| 17.23 | 13.50 | 270 | 1.4734 |
| 17.50 | 13.75 | 275 | 1.5003 |
| 17.77 | 14.00 | 280 | 1.5272 |

[a]For every 0.01 percentage point, quality factor increments or decreases by 0.001.

[b]For every percentage point, quality factor increments or decreases by 0.1077.

[c]For every pound, quality factor increments or decreases by 0.0054.

Source: [3].

Table 5.--Costs and returns for a 640-acre sugarcane operation in south Florida, 1978-79

| Item | Unit | Quantity per acre | Price of cost/unit | Approximate value or cost/acre | Number of acres | Gross value or cost |
|---|---|---|---|---|---|---|
| Total revenues[a] | | | | | | |
| Seed cane | gross ton | 48.00 | 20.00 | 960.00 | 12 | 11,520 |
| Sugarcane plant cane | net std. ton | 58.20 | 17.22 | 1,002.20 | 132 | 132,290 |
| Sugarcane 1st ratoon | net std. ton | 40.54 | 17.22 | 698.10 | 144 | 100,526 |
| Sugarcane 2nd ratoon | net std. ton | 30.55 | 17.22 | 526.07 | 144 | 75,754 |
| Molasses payment | ave. net ton | 37.95 | 0.458 | 17.38 | 420 | 7,300 |
| Total | | | | | | 327,390 |
| Total variable costs | | | | | | |
| Land preparation[b] | acre | | | 66.02 | 144 | 9,506 |
| Planting[b] | acre | | | 203.55 | 144 | 29,566 |
| Plant cane cultiv.[b] | acre | | | 34.72 | 144 | 5,000 |
| Ratoon cultiv.[b] | acre | | | 46.87 | 288 | 13,499 |
| Overhead activities[b] | acre | | | 8.75 | 640 | 5,602 |
| Labor benefits[c] | acre | | | 1.75 | 640 | 1,123 |
| Miscellaneous[d] | acre | | | 8.84 | 640 | 5,655 |
| Interest[e] | acre | | | 10.92 | 640 | 6,990 |
| Harvesting[b] | acre | | | 331.74 | 420 | 139,332 |
| Total | | | | | | 216,220 |
| Total fixed costs | | | | | | |
| Machinery and equip.[f] | acre | | | 21.36 | 640 | 13,670 |
| Land charge | acre | | | 90.00 | 640 | 57,600 |
| Taxes: land and drainage | acre | | | 16.75 | 640 | 10,720 |
| Total | | | | | | 81,990 |

[a]See text for procedure used in computing total revenues.

Continued

Table 5.--Costs and returns for a 640-acre sugarcane operation in south Florida, 1978-79--Continued

[b]From Table 3.

[c]At 12% of gross salary and includes social security and unemployment and workmen's compensation.

[d]At 10% variable costs above and includes pick-up truck use, office supplies, telephone, etc.

[e]At 10% of pre-harvest variable costs.

[f]From Table 2.

Table 6.--Returns per gross acre to factors of production for a 640-acre sugarcane operation in south Florida, 1978-79

| Item | Charge | Return |
|---|---|---|
| | ---- Dollars ---- | |
| Total revenue over variable costs to labor, fixed costs, land, and management and risk | | 511 |
| Variable costs (excluding labor) | 336 | |
| Return to labor, fixed costs, land, and management and risk | | 175 |
| Labor (2.8 hrs. at $3.60/hr.) | 10 | |
| Return to fixed costs, land, and management and risk | | 165 |
| Fixed costs (Machinery, equipment, and taxes) | 38 | |
| Return to land and management and risk | | 127 |
| Land charge | 90 | |
| Return to management and risk | | 37 |

## REFERENCES

[1] American Society of Agricultural Engineers. Agricultural Machinery Management Data--1977 Agricultural Engineer Yearbook, Michigan, 1977.

[2] Brooke, D. L. "Cost of Producing Sugarcane and Processing Raw Sugar in South Florida, 1975-76," Food and Resource Economics Department Economics Report 84, University of Florida, Gainesville, March 1977.

[3] Halsey, Larry A. "A Management Guide to Profitable Sugar Production," Belle Glade AREC Research Report EV-1976-8, University of Florida Agricultural Research and Education Center, Belle Glade, September 1976.

[4] Mulkey, David and John Gordon. "The Economic Importance of the Sugar Industry in South Florida," Food and Resource Economics Department Staff Paper 117, University of Florida, Gainesville, February 1979.

[5] U.S. Congress. House. The United States Sugar Program, 91st Congress, 2nd Session, U.S. Government Printing Office, Washington, D.C. 1971.

[6] Walker, Charles. "Costs and Returns from Sugarcane in South Florida," Florida Cooperative Extension Service Circular 374, University of Florida, Gainesville, June 1972.

[7] Walker, R. L. and Darrel D. Kletke. An Application and Use of the Oklahoma State University Crop and Livestock Budget Generator, Research Report #P-663. Oklahoma Agr. Exp. Stat., Stillwater, July 1972.