

COST STRUCTURE FOR CASSAVA AND COMPETING CROP IN IBADAN METROPOLIS, OYO STATE, NIGERIA

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ABSTRACT

In the farm management studies, costs are viewed from different angles for different purposes. Cost of cultivation data are used by the Agriculturist and Price Commission for fixation of prices of agricultural commodities. Besides this, they are also useful in farm planning and policy making. Therefore, due consideration should be given to cover both operational and fixed cost to operate agriculture as a business and not as a way of life only.

Keywords: Cost Structure, Cassava, Competing Crop and Nigeria

INTRODUCTION

Recently, production figures ranked Nigeria as the leading producer of cassava in the world. In 2004, the estimated cassava output from Nigeria was approximately 34 million tones. This production performance had rated Nigeria as the largest cultivator of cassava in the world. This fact is sequel to the on-going cassava multiplication programmes in the country. In 2002, cassava suddenly gained prominence in Nigeria following the pronouncement of the presidential initiatives on the crops. This initiative was aimed at using cassava production as engine of growth in Nigeria.

In recent time, Government has encouraged the use of the crop to produce wide range industrial products such as ethanol, glue, glucose syrup and bread. Recently, the Nigerian government promulgated a law, making it compulsory for the baker to use composite flour of hundred percent cassava and ninety percent wheat for bread production. The new regulation which is effect, January, 2005, stipulated that the larger flour mills that supply flour to bakeries and confectioneries must pre-mix cassava flour with flour.

In 1994, 45 percent of the world's population lived in cities and according to the United Nations Center for Human settlements (UNCHS – Habitat), it is expected that this percentage will increase to more than 50 percent by the year 2000 and 65 percent by 2025. The United Nations (UN) also says that the rate of urban growth is highest in Africa, at 4.4 percent a year. In 1990, 288 cities in developing countries had a population of more than 1 Million people and that by the year 2000, there will be 391 such cities.

World Bank (2000), also projected figures indicate that 63 percent of the estimated population of 430 Million will be found in urban centers of the West Africa by the year 2020. Most cities in developing countries are not able to generate sufficient (formal or

informal) income opportunities for the quickly growing population. Urban agriculture is generally labour intensive and occurs in small plots but some concerns of rural agriculture such as transportation costs.

However, other production considerations are more serious when cultivation takes place in urban areas, such as tenure insecurity, theft and environmental consequences. Therefore since urban agriculture played a considerable role in providing for the ever increasing population and reduces some of the problems being encountered by rural agriculture. Having recognized the contribution of urban agriculture to some other countries. It has a great potential to boost the food needs of Nigerians whose urban population has continue to rise by the day through rural-urban migration. In order for these urban farmers' production to be enhanced. There is the need to estimate the profitability and Allocative resource-use efficiency of cassava production in Ibadan metropolis.

The study was carried out in Ibadan metropolis of Oyo State. The city of Ibadan, an ancient town in South-Western Nigeria and actually the largest in West Africa. Secondary data were mainly collected from the published documents of Federal and Oyo State Ministry of agriculture and web site of National Bureau of Statistics, Abuja, Nigeria.

Materials and Methods

The present study has been confined to the traditional cassava growing state of the Nigeria namely: ajibode, eleyele and ijokodo. The data required for the study were primary in nature for which survey of 150 households comprises 50 each from small, medium and large farm, spread over the three areas namely:ajibode, eleyele and ijokodo were conducted using pre-tested interview-schedule and pertains to the agricultural year 2010-11. A multistage random sampling were employed to draw a representative sample, cost of cultivation, profitability concept, break-even point, technology adoption index etc techniques were employed to analyzed the collected data.

Cost and Returns

Traditional Cassava

It is observed from the Table 5.12 that the total cost incurred in cultivation of traditional cassava at the overall level was 123110 per hectare which was highest in small farm(#135244) followed by medium farm (#122690) and large farm (#111400) although the difference was not quite extra-ordinary between the different size farms.

The total operational cost incurred was #87800 which varied between #79220 in large farm to #87640 on small farm. The component of fixed cost was shared between the small, medium and large farms respectively and fixed cost increased with increase in size of holdings. Also, among various items of materials cost, the major items of expenditure was seed, which was found lowest on large and medium farm whereas it was highest in case of small farm. Thus, conclusion may be drawn from foregoing discussion that the cost of labour increases as the size of holdings.

Table 1. Cost of Cultivation of Cassava Production and its Competing Crop

| Particular | Traditional Cassava | | | |
|----------------------------|---------------------|--------|--------|--------|
| | S | M | L | O |
| Operational | 96560 | 87640 | 79220 | 87800 |
| Fixed cost | 38664 | 35050 | 32180 | 35310 |
| Total cost | 135244 | 122690 | 111400 | 123110 |
| Main Production (in tones) | 14 | 11.2 | 10.15 | 11.21 |
| By Production (in tones) | 5 | 2 | 3 | 3 |
| Particular | Hybrid Cassava | | | |
| | S | S | S | S |
| Operational | 146660 | 118060 | 108440 | 124286 |
| Fixed cost | 58664 | 49624 | 46370 | 51552 |
| Total cost | 205324 | 167684 | 154810 | 63991 |
| Main Production (in tones) | 30 | 26 | 22 | 26 |
| By Production (in tones) | 10 | 9 | 9 | 7 |
| Particular | Yam | | | |
| | S | S | S | S |
| Operational | 20894 | 19306 | 17974 | 19391 |
| Fixed cost | 80576 | 79420 | 76350 | 58782 |
| Total cost | 101470 | 98726 | 94324 | 98173 |
| Main Production (in tones) | 22 | 24 | 22 | 20 |
| By Production (in tones) | 3 | 1 | 2 | 4 |

Note: S= Small, M = Medium, L = Large and O = Overall

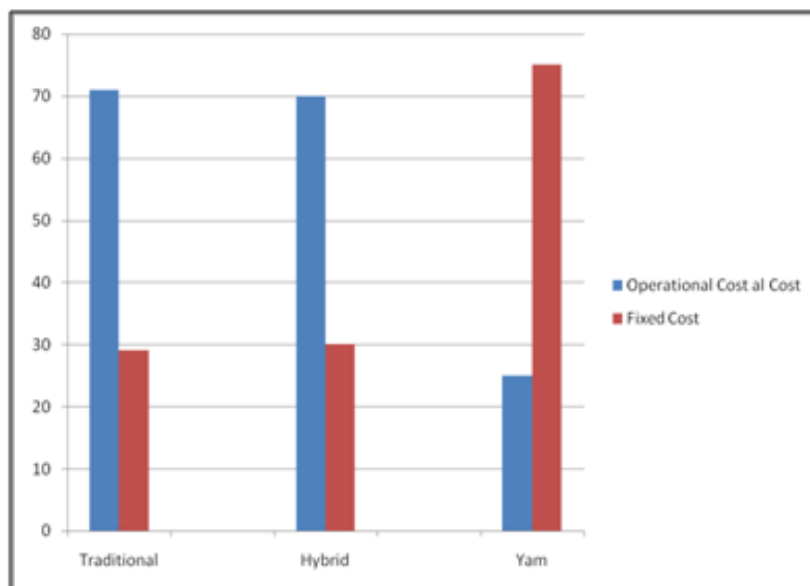


Figure 1: Overall Cost of Cultivation of Cassava and its Competing Crop (#/tones)

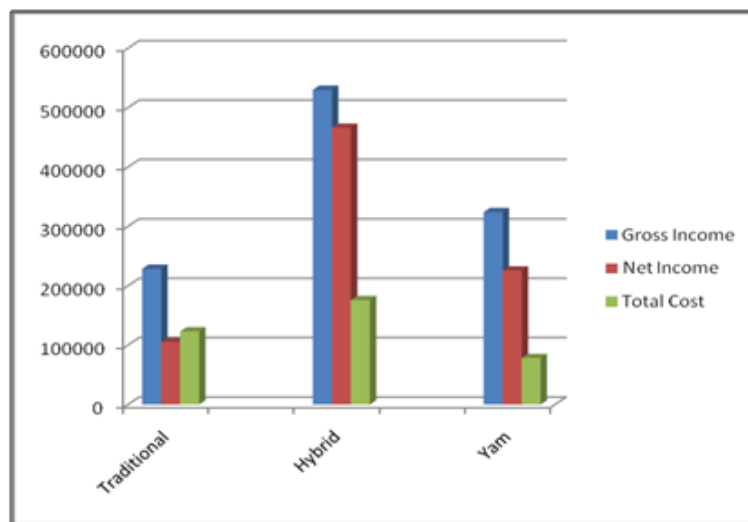


Figure 2: Overall Economics of Cassava and its competing Crop

Hybrid Cassava

Sample farmers dented significant proportion of the total cropped area under this particular situation table 1 speaks that the total cost per hectare was lowest (#57214) on large farm whereas in small and medium farm it accounted #73330 and #61430 respectively. The cost per hectare for average of all size farms was #52781and among material cost, seed cost was high as compared with other inputs such as fertilizers. The table 5.12 also shows the increasing trend of total cost per hectare with respect to the size groups. Although, there was no extra-ordinary difference. The level of main and by product shows inverse relation with farm sizes

Competing Crop (Yam)

The total cost incurred by small farm was #101470; medium farm incurred total cost of #98726 while large farm spent #94324. The overall cost was #273695.Despite huge cost incurred overall, the total cost decrease based on farm holdings. The same condition occurred with respected to operational and fixed cost incurred during the production year. Maximum production was observed in medium farm (24tones/ha), followed by small and large farm (22tones/ha) showing no trend with the farm size.

Table 2. Break- Even On Cost (CASSAVA)

| Particular | | Small | Medium | Large | Overall |
|-------------|----------------------|--------|--------|--------|---------|
| Traditional | Market Price(#/tons) | 20,000 | 20,000 | 20,000 | 20,000 |
| | Break- even(#/tons) | 9142 | 10696 | 10548 | 10128 |
| | Difference(#) | 10858 | 9304 | 9452 | 9872 |
| | Percentage (%) | 54 | 47 | 47 | 49 |
| Hybrid | Market Price(#/tons) | 20,000 | 20,000 | 20,000 | 20,000 |
| | Break- even(#/tons) | 6361 | 5560 | 6420 | 6113 |
| | Difference(#) | 13639 | 1440 | 13580 | 13887 |
| | Percentage (%) | 68 | 72 | 68 | 69 |

The break- even level of cost of production as shown in above table means that with the given cost of cultivation and physical output of traditional and hybrid, cassava would remain in profit. It implies that market price of cassava gave sufficient profit to farmer over cost.

Table 3. Brakes-Even On Yield (CASSAVA)

| Particular | | Small | Medium | Large | Overall |
|-------------|---------------------|-------|--------|-------|---------|
| Traditional | Actual yield(tons) | 14 | 11.2 | 10.15 | 11.21 |
| | Break- even(tons) | 6.3 | 5.9 | 5.3 | 5.4 |
| | Difference(tons) | 7.7 | 5.3 | 4.85 | 5.81 |
| | Percentage (%) | 55 | 47 | 22 | 51.8 |
| Hybrid | Actual yield (tons) | 30 | 26 | 22 | 26 |
| | Break- even(tons) | 9.5 | 7.9 | 7.0 | 8.1 |
| | Difference(tons) | 20.5 | 18.1 | 15 | 17.9 |
| | Percentage (%) | 68.3 | 69 | 68 | 68 |

The table 3 reveals that the selected farmers will not be at loss even if their actual yield of both traditional and hybrid cassava is lowered by 6.3 and 9.5tons per hectare. The same condition applicable to both medium and large size holdings. It implies that the existing cost of cultivation and physical output of the crop yielded sufficient profit to the same farmers.

Economics of Cassava and Its Competing Crop on Small Farm

The economics of traditional, hybrid cassava and its competing crop viz; Yam on sample holdings is presented in table 5.15 so as to provide norms of cost of cultivation and profitability levels of these crops in the study area.

Small farm

Table 4. Economics of Cassava and its Competing Crop on Small Farm (#/ha)

| Particulars | Cassava | | Yam |
|--------------------|-------------|--------|--------|
| | Traditional | Hybrid | |
| Total Cost | 135244 | 205324 | 101470 |
| Gross Income | 287250 | 614500 | 355000 |
| Net Income | 152006 | 541170 | 253530 |
| Benefit-Cost Ratio | 2.12:1 | 2.99:1 | 3.49:1 |

Under the present circumstances of prices of inputs and outputs which prevailed in the study area. It is comparatively to grow hybrid cassava in small farm as it gives the maximum net return (#541170) as compared to other crops. In terms of Gross Income, the highest income was obtained again by hybrid cassava and lowest by traditional cassava followed yam (#152006).So far as output-input ratio was concerned it was more favorable to grow hybrid cassava and least favour was to yam.

Medium Farm**Table 5.** Economics of Cassava and its Competing Crop on Medium Farm (#/ha)

| Particulars | Cassava | | Yam |
|--------------------|-------------|--------|--------|
| | Traditional | Hybrid | |
| Total Cost | 122690 | 167684 | 98726 |
| Gross Income | 226900 | 533050 | 385000 |
| Net Income | 104210 | 365366 | 286274 |
| Benefit-Cost Ratio | 1.84:1 | 3.17:1 | 3.8:1 |

As shown in table 5 hybrid cassava also performed better on medium farm not only gave a maximum of #365366 per hectare of net return but also yielded higher benefit-cost ratio 3.17 as compared to 1.84 in respect of traditional and need special attention by agricultural scientists against 3.8 in case of yam. In terms of gross income, the highest income was obtained from hybrid cassava and by yam viz #533050 and 385000 respectively.

Thus, next to hybrid cassava, traditional cassava during wet season was found to be the best options in the study area under prevailing market conditions. The net income level is quite low in case of yam and calls for concern to the planner to find out ways to increase the income level.

Large Farm**Table 6.** Economics of Cassava and its Competing Crop on Large Farm (#/ha)

| Particulars | Cassava | | Yam |
|--------------------|-------------|--------|--------|
| | Traditional | Hybrid | |
| Total Cost | 111400 | 154810 | 94324 |
| Gross Income | 207350 | 453050 | 354000 |
| Net Income | 95950 | 298240 | 259676 |
| Benefit-Cost Ratio | 1.86:1 | 2.92:1 | 3.75:1 |

The table 6 shows that hybrid cassava gave maximum return in terms of gross income (#453050) and net income (#395836) respectively. Yam crop has (#354000) gross income and (#259676) net income, followed by traditional cassava with lowest amount of #207350 gross incomes and #95950 net incomes respectively. Also, based on output-input ratio, it was favorable to grow hybrid cassava because of the high multiplier effect in return as compared to traditional cassava and yam.

Overall Farm

Table 7. Economics of Cassava and its Competing Crop on Overall Farm (#/ha)

| Particulars | Cassava | | Yam |
|--------------------|-------------|--------|--------|
| | Traditional | Hybrid | |
| Total Cost | 123110 | 63991 | 98173 |
| Gross Income | 228550 | 530150 | 324000 |
| Net Income | 105440 | 466159 | 225827 |
| Benefit-Cost Ratio | 1.85:1 | 8.28:1 | 3.30:1 |

The table 7 shows that the net income per hectare for traditional cassava was #105440, hybrid cassava #477369 and yam #50305 respectively. It was noted that output-input ratio was highest (8.28) from hybrid cassava followed by traditional cassava (1.85) and yam (3.30). Thus, hybrid cassava turned out to be attractive in terms of net return and benefit-cost ratio from business point of view, one may conclude that the rate of return on traditional cassava is quite low and it really yam and hybrid cassava where one gets quite a high return. But one should keep in mind that rising of the crops under Nigeria condition is a way of life and not on business principle.

Table 8. Break- Even On Cost (CASSAVA)

| Particular | | Small | Medium | Large | Overall |
|-------------|----------------------|--------|--------|--------|---------|
| Traditional | Market Price(#/tons) | 20,000 | 20,000 | 20,000 | 20,000 |
| | Break- even(#/tons) | 9142 | 10696 | 10548 | 10128 |
| | Difference(#) | 10858 | 9304 | 9452 | 9872 |
| | Percentage (%) | 54 | 47 | 47 | 49 |
| Hybrid | Market Price(#/tons) | 20,000 | 20,000 | 20,000 | 20,000 |
| | Break- even(#/tons) | 6361 | 5560 | 6420 | 6113 |
| | Difference(#) | 13639 | 1440 | 13580 | 13887 |
| | Percentage (%) | 68 | 72 | 68 | 69 |

Table 9. Brakes-Even On Yield (CASSAVA)

| Particular | | Small | Medium | Large | Overall |
|-------------|---------------------|-------|--------|-------|---------|
| Traditional | Actual yield(tons) | 14 | 11.2 | 10.15 | 11.21 |
| | Break- even(tons) | 6.3 | 5.9 | 5.3 | 5.4 |
| | Difference(tons) | 7.7 | 5.3 | 4.85 | 5.81 |
| | Percentage (%) | 55 | 47 | 22 | 51.8 |
| Hybrid | Actual yield (tons) | 30 | 26 | 22 | 26 |
| | Break- even(tons) | 9.5 | 7.9 | 7.0 | 8.1 |
| | Difference(tons) | 20.5 | 18.1 | 15 | 17.9 |
| | Percentage (%) | 68.3 | 69 | 68 | 68 |

Table 10. Economics of Cassava and its Competing Crop on Medium Farm (#/ha)

| Particulars | Cassava | | Yam |
|--------------------|-------------|--------|--------|
| | Traditional | Hybrid | |
| Total Cost | 122690 | 167684 | 98726 |
| Gross Income | 226900 | 533050 | 385000 |
| Net Income | 104210 | 365366 | 286274 |
| Benefit-Cost Ratio | 1.84:1 | 3.17:1 | 3.8:1 |

Table 11. Economics of Cassava and its Competing Crop on Overall Farm (#/ha)

| Particulars | Cassava | | Yam |
|--------------------|-------------|--------|--------|
| | Traditional | Hybrid | |
| Total Cost | 123110 | 63991 | 98173 |
| Gross Income | 228550 | 530150 | 324000 |
| Net Income | 105440 | 466159 | 225827 |
| Benefit-Cost Ratio | 1.85:1 | 8.28:1 | 3.30:1 |

Table 12. Economics of Cassava and its Competing Crop on Large Farm (#/ha)

| Particulars | Cassava | | Yam |
|--------------------|-------------|--------|--------|
| | Traditional | Hybrid | |
| Total Cost | 111400 | 154810 | 94324 |
| Gross Income | 207350 | 453050 | 354000 |
| Net Income | 95950 | 298240 | 259676 |
| Benefit-Cost Ratio | 1.86:1 | 2.92:1 | 3.75:1 |

CONCLUSIONS

1. Cost and return of cassava and its competing crops revealed that on overall farm total cost per hectare incurred in cassava production was to the extent of #87800 which varied between #79220 in large farm to #96560 in small farm. Thus, physical output was produced more on small farm (14tones/ha) followed by medium farm (11.2 tones/ha) and large farm (10.1 tones/ha) revealing inverse relation with farm size. Similarly, cost of cultivation of competing crop yam estimated to be #29251 per hectare with maximum amount incurred on small farm and minimum (27248#/ha) in case of large farm revealing inverse relation with farm size. About two-third of the total cost was shared by operational cost leaving the balance position by fixed cost. Likewise cost of cultivation, productivity also negatively correlated with the farm size. Maximum productivity level was on small farm and minimum was achieved in large farm.
2. Break-even analysis indicated that actual market price of cassava was 49 per cent more than its break-even price. Thus, farmers are gaining substantial profit from the existing cassava output and actual price prevailed in the market in the study area.

Similarly respondents are not in a losing position if traditional and hybrid cassava production declined by 52 per cent and 68 per cent respectively.

3. Under the present circumstances of prices of inputs and output prevailed in the study area, it is comparatively to grow hybrid cassava in all three sized farms i.e. small, medium and large farm as it gives the maximum net return per hectare and benefit-cost ratio as compared to traditional cassava and yam.

RECOMMENDATIONS

Some suggestions for higher and equitable production of cassava are given below:

- The potential to expand output is simple if government and other related institutions pay more attentions to agriculture sector.
- Government must find solution to problem of land fragmentation through embarked on effective policies that will militate against this problem.

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