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SOME ASPECTS OF THE MARKETING OF LEGUMINOUS
GRAINS IN URBAN AND PERI-URBAN SOROTI



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GRAINS IN URBAN AND PERI-URBAN SOROTI

by

J.C.C. Nyankori

INTRODUCTION

A salient feature of our dietary system is the relative scarcity of animal protein. Apart from traditions, this is associated with the low average income and high subsistence agricultural practices.

The percapita daily consumption of animal protein in Uganda is approximately 20 grammes¹ and yet the average daily requirement is 85 grammes.² However, this protein gap is being bridged in a number of ways one of which is the current emphasis on the production and consumption of plant proteins. In Teso District, for example, in 1968 during the first rains 10,200 and 303,100 acres were under beans and cowpeas, respectively.³ Groundnuts, millet, soyabean and peas are the other plant animal protein supplements.

For a large proportion of these crops, the production and consumption bypass the established marketing machinery. The small portion that trickles through the marketing system is a major source of food to a rapidly growing section of our society - the urban area.

If this food flow is to be increased and sustained, the marketing mechanism has to be overhauled. The problem is not so much on the production as on the marketing side. MacDonald(3)

¹ This is estimated from, Report of the Committee on the Marketing of Livestock, Meats, Fish and Their Products in Uganda, 1969. Government Printer, Entebbe, Uganda, 1970.

² S. Kiyingi. Personal Communication.

³ Report of Annual Agricultural Statistics 1967/8 and 1968. Department of Agriculture, Information and Visual Aids Centre, Entebbe. p.58.

estimated that in Uganda, the production of food crops is sixty percent over the requirement, yet the problem of food shortage and the related price inflation is approaching endemic proportion.

Food inadequacy and the low cash returns associated with the consumption and production of food crops may be attributed to the performance of the marketing system. This study is therefore, directed at some aspects of the marketing mechanism of selected leguminous grains in the Soroti area in the light of improvement possibilities.⁴ It has been motivated by the dual instrumental role of these crops in bridging the protein gap and diversifying farm income sources.

METHODOLOGY

The study is based on the greater Soroti area. Three crops were selected for the study: beans (Phaseolus vulgaris), cowpeas (Vigna unguiculata), and green grams (Vigna zureus).

A number of retail stores handling agricultural products were selected at random from downtown Soroti (S), Kenghere (K), and Aloet (A).⁵ From each store, two pounds of each commodity were purchased and reweighed in the laboratory on a more accurate scale.

By the quadrant method, a sample was taken from each purchase, weighed and then sorted out into clean, damaged, insect bored seeds, zoological species and foreign matter. Each sample component was then weighed and this expressed as a percentage of the total sample weight.

The main interest was in the amount of clean seeds in the samples. A seed is considered clean when it shows no signs of insect and pest attack, physical damage, and other deformations. These criteria were arrived at through the judgement of a wide range of housewives and personal experience. Other qualitative information was also taken in relation to the sources of supply

⁴ For background information on the area studied refer to Appendix I.

⁵ Refer to Appendix I.

shelfing and storage.

Data analysis was dictated by the hypotheses that:

- (a) there is no commodity price and quality differential between locations, and
- (b) there is no correlation between price and quality in each case in each location.

These, therefore, involved the use of the analysis of variance and correlation analysis techniques, accordingly.

RESULTS AND ANALYSIS

Table 1 shows the retail prices of the commodities in the different locations and the weight of the purchases expressed as a percentage of two pounds.

Table 1

The Retail Prices and the Corresponding Weights of the Produce in different stores in each of the Locations (S, A, K).*

(Beans) S			A		K	
	Price	% Weight	Price	% Weight	Price	% Weight
Store						
1	80	103.5	60	100.7	100	103.5
2	80	104.8	50	103.5	80	105.1
3	60	102.2	60	105.1	80	103.8
4	70	100.2	100	104.0	80	104.8
5	80	105.1	60	103.0	-	-
6	60	103.0	-	-	-	-
7	60	104.2	-	-	-	-
Average	70	104.2	66	103.2	85	104.3
Store	(Cowpeas)					
1	80	105.1	70	102.9	100	104.2
2	60	100.4	70	103.5	80	104.0
3	60	103.8	80	103.1	80	102.6
4	100	101.6	70	104.2	100	103.4
5	80	100.7	80	102.6	-	-
6	80	103.9	-	-	-	-
7	70	102.5	-	-	-	-
Average	75	102.5	74	103.2	90	103.8
Store	(Green Grams)					
1	80	98.2	70	104.4	100	104.2
2	60	104.0	70	102.9	80	106.2
3	60	105.7	80	103.0	80	107.1
4	100	102.0	70	108.0	100	105.5
5	80	102.4	80	104.5	-	-
6	80	100.9	-	-	-	-
7	70	102.7	-	-	-	-
Average	78	103.7	74	104.5	90	105.7

* Prices are in cents per pound.

On the whole the weighing is inaccurate upwards by 2.5 - 5.7 percent. That is, out of every 100 pounds of the commodity sold, at least an extra 2.5 pounds are given 'free'. This, cumulatively, is a substantial loss to the seller.

The source of this inaccuracy is not so much the scale as the scale operator. The type of scale commonly used in the retail stores is the 'Avery 28 lb Scale'. The proper use of this scale requires a high degree of patience and attention as there is no pointer or handy weight indicator. Under shop conditions, these requirements are hard to come by and so the operators normally rely on the intensity of the clicking sound made by the impact of the pan on the base as the indicator of the correct weight. Inevitably, this human factor is conducive to inaccuracy in weighing. The weight variability within a given store would testify to this observation.

A test of the difference between the mean percentage 'accurate' weight turned out results which are not significant at the 5 percent probability level. This is an indication that no particular location is more or less accurate than the others and that these inaccuracies are inbuilt in the weighing system.

Quality and Price:

A general examination of the data gave no evidence to suggest a dependency between the two variables - price and quality. However, a correlation analysis was undertaken to determine the price-quality variation pattern in each locality and for each commodity. Quality index was taken to be the percentage by weight of seeds classified as clean. In the absence of any standards and grading system, this seems to be a workable alternative for indicating the table quality-price relationship.

Table 2

THE BEANS PRICE-QUALITY VARIATIONS IN SOROTI
ALOET AND KENGHERE

Store	S		A		K	
	Price	% Clean Seeds	Price	%Clean Seeds	Price	%Clean Seeds
1	80	65.1	60	77.2	100	69.0
2	80	81.1	50	65.3	80	85.4
3	60	61.7	60	57.0	80	84.5
4	70	51.6	100	40.4	80	75.0
5	80	69.6	60	50.0	-	-
6	60	70.3	-	-	-	-
7	60	70.2	-	-	-	-
r	0.247		-0.832		0.292	

Prices are in cents per pound.
r is the correlation coefficient.

In location A the correlation coefficient is negative and this is contrary to expectations based on the marketing theory. In all locations, the correlation coefficients are not significant at the 5 per cent probability level.

The modal price is 80 cents a pound and the modal percentage range of clean seeds is 60-70. For all locations, the price ranges from 50 to 100 cents and the quality range is 40.4 - 85.4 per cent.

In Table 3 similar information is provided for cowpeas price-quality variations.

Table 3

COWPEAS PRICE-QUALITY VARIATIONS IN SOROTI
ALOET AND KENGHERE

Store	S		A		K	
	Price	%Clean Seeds	Price	%Clean Seeds	Price	%Clean seeds
1	80	60.1	70	45.6	100	48.4
2	60	44.5	70	55.8	80	61.0
3	60	45.0	80	52.0	80	48.5
4	100	55.6	70	66.6	100	39.4
5	80	32.4	80	64.8	-	-
6	80	74.1	-	-	-	-
7	70	53.8	-	-	-	-
r	0.470		0.144		0.278	

In this case, the correlation coefficients are all not significant at the 5 percent probability level. The modal price is 80 cents per pound and the modal percentage range of clean seeds is 45-55. The total price range is 60-100 cents per pound and the total quality range is 32.4 - 74.1 per cent.

For green grams, there too, is no meaningful relationship between the prices and the quality levels. The correlation coefficients are all not significant at the 5 per cent probability level and as shown in Table 4 the median percentage of clean seeds is 66-75 per cent. The median price is 80 cents per pound.

Table 4
GREEN GRAMS QUALITY-PRICE VARIATIONS IN SOROTI,
ALOET AND KENGHERE

Store	S		A		K	
	Price	%Clean Seeds	Price	%Clean Seeds	Price	%Clean seeds
1	80	50.0	70	91.0	100	70.4
2	60	69.1	70	65.4	80	69.2
3	60	82.4	80	57.2	80	87.0
4	100	68.3	70	39.5	100	84.1
5	80	52.0	80	40.0	-	-
6	80	60.9	-	-	-	-
7	70	71.2	-	-	-	-
r	.314		0.432		0.394	

On the whole, the range of clean seeds is 39.5 - 91.0 per cent and the prices ranged from 60 to 100 cents a pound.

In Kenghere, for all commodities, the prices are more concentrated towards the higher end of the price spectrum and the quality of commodities, excepting cowpeas, are similarly located.

A different pattern exists in downtown Soroti. The prices and quality traverse practically the whole length of the price and quality spectra with a concentration in the middle zones.

The price ranges in Aloet are generally short and towards the lower end of the spectrum but the quality range lengths are intermediate between Kenghere and Soroti and are similarly located in the total quality spectrum.

DISCUSSION

The marketing of food crops is centralised under the Produce Marketing Board (PMB). Under this arrangement a list of produce is declared 'Controlled Produce' and minimum farm prices are set by statutory instruments. All the controlled produce has to be sold through the co-operatives from where they are consigned to the PMB. Subsequent marketing functions are the responsibility of the PMB.

The effect of the inaccuracy in weighing is not immediately obvious. But with the estimated 2060 tons of beans produced in Teso in 1968⁶, the farmers were not paid for 40.6 tons. In monetary terms, the farmers lost 17,920 Shs. worth of beans. If the same estimate is made for the other commodities, the income the Teso farmer foregoes reaches alarming proportions. Yet this is attributed to 'geniune' human errors. However, in such situations where there is a wide latitude of human judgement, it is possible that the human error may be converted to advantage. The nature and extent of fraudulent practices with respect to weighing was not investigated, but should such practices exist, the loss of the farmer would be compounded further. The retailer may also be subject to losses due to weighing inaccuracies but it is possible that the inaccuracies at the commodity intake level compensates for that at the commodity outlet level.

The Weights and Measures unit of the Ministry of Commerce and Industry carries out regular checks of the retail stores. However, they cannot be there all the time and it would appear that a more precise and easily read scale ought to be adopted for use in the retail stores. Alternatively, the sale of the produce in pre-packaged units of 1,2,5, 10 kilos could help reduce the loss at the retailer-consumer level.

⁶ Estimated from, Report of the Agricultural Statistics 1967/8 and 1968, Department of Agriculture, Information and Visual Aids Centre, Entebbe. 1969.

The volume of the outflow of produce from the farms to the marketing system is influenced by several factors, one of which, no doubt, is the cash returns. Currently the farm prices of non-export crops are relatively low, for example, out of every one shilling a consumer spends on green grams, the farmer gets twenty six cents. Below is an indicator of the farmer's share of the consumer's shilling spent on beans, cowpeas, green grams and milk.⁷

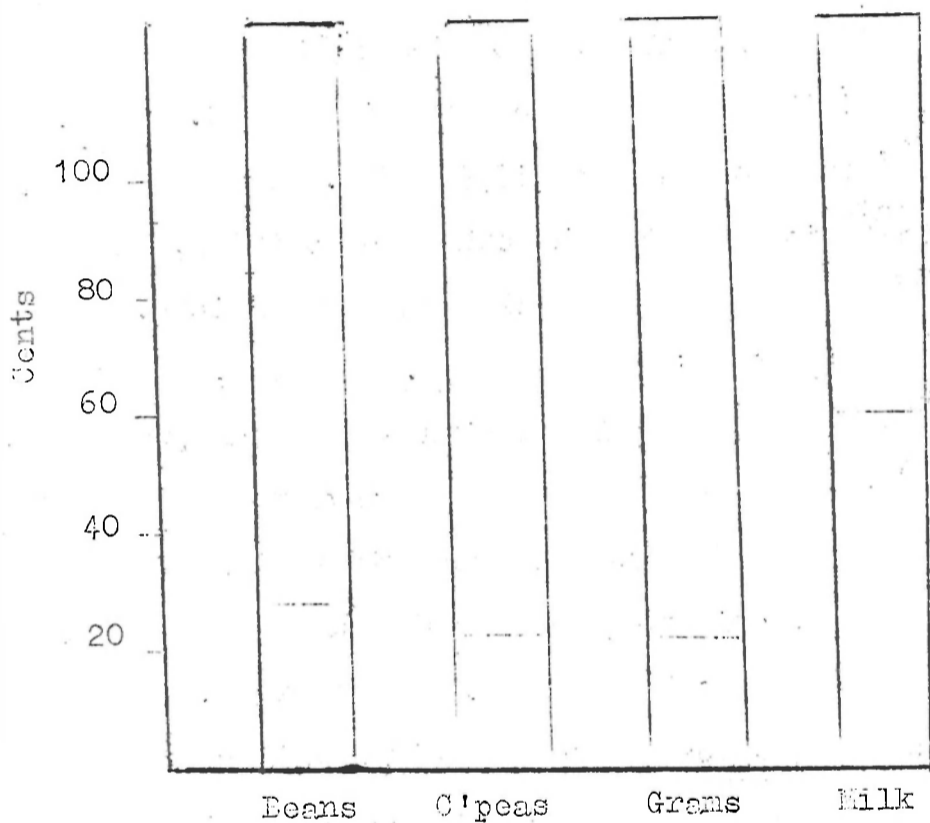


Fig.1. Farmer's share of the Consumer's Shilling Spent Beans, Grams, Cowpeas and Milk in the Soroti Area.

The price spreads of cowpeas, beans and green grams are unjustifiably concentrated on the middleman. In most cases the retailers get the produce from the farmers directly and sell to consumers in practically the same physical form. If in the dairy industry where the value added is much higher the farmer gets 60 cents of the consumer's shilling, it leaves hardly any room for doubting, at least one retarding factor to the growth of the leguminous crops industry.

⁷ Tetrapack milk from the Dairy Industry Corporation Plants.

The determination of minimum prices for the various commodities is currently based on the cost-plus concept. Generally stated, the average retail price for each commodity is computed and a market margin is deducted; the difference is the selling price of the next agent in the marketing channel - say, the wholesaler. This is repeated till the next agent in the line is the farmer and then the final difference is the minimum price (farm).

There are several drawbacks to this method of price determination, especially in an economy like ours. As it is, the method does not emphasise the importance of quality differential, cost of production, the demand and supply condition. Apart from the authenticity of the base retail prices, the average obtained is representative only in a statistical sense. That this is so is shown by the variability of the prices and the lack of correlation between the prices and the quality of the commodities. The base price, in the first instance, is artificial.

Below, an alternative price model is proposed based on marketing forces which underly the price levels. In its crude form, the price (P_t) is:

$$P_t = aX_1^n + bX_2^m + cX_{3t-1} + dX_{4t}$$

where:

P_t is the farm price of the commodity during period t ,

X_{1t} is a cost factor during t ,

X_{2t} is a quality factor,

X_{3t-1} is the total production of the commodity lagged by one production period, and

X_{4t} is the estimated production during t ,

n and m are constants less than unity, and

a, b, c, d , are constants where c and d are negative.

Retail Prices:

For each commodity, quality differentials do not explain the price level. The price levels for each commodity has got to be explained in terms of the conduct of each store, the expected profit margin, business volume, market share, reputation of the store, the nature, if any of price competition, and the managerial ability of the storekeeper.

However, the existence of a distinct median price for each commodity would suggest that there is a tacit price leadership reigning within the larger Soroti market.⁸ With the lack of data, it was not possible to work out the market share and business volume of each store. But it would appear that there is an oligopolistic structure in the retail business where there are a few large dealers and a number of small competitors - the small competitive fringe.

The concentration of prices and quality towards the higher price and quality end of the price and quality spectra, respectively, in Kenghere, could be interpreted in two different but related ways. First of all, the community is totally dependent on the retail stores as the source of food and with a limited transportation and domestic storage facilities, a practical alternative is to patronize the neighbourhood stores. The Kenghere retailers then find they have, as it were, a captive patronage audience. The prices are then set high but not high enough to divert the patronage to other markets.

The second interpretation is concerned with the relatively high quality of the commodities. One probable explanation is that the community, depending on the market as it does, has developed a high level of consumer sophistication and is therefore, more selective and has a greater bargaining power than his Alooet counterpart. These attributes may therefore, tend to condition the retailer to be conscious and selective of the kind and quality of stock he purchases.

⁸ the larger Soroti Market is composed of downtown Soroti and the peri-urban areas.

In Aloit the prices are concentrated on the lower level end of the price spectrum. This is attributed to the fact that the community is largely agricultural and therefore provide most of their own food requirement. In several cases, the employed landless obtain food directly from farmers. There, then, exist a micro-competition between the farmers and the retailers, which has the effect of forcing the retail prices downwards.

The wide price and quality ranges in the downtown Soroti area may be attributed to the heterogeneous nature of the customers. This market serves, in addition to the residents, a wide range of customers many of which are in transit and are specially widely dispersed. The permanent temporary nature of patronage can, therefore, accommodate a wide variation in prices and quality.

Quality;

In this study, seed quality is based on factors which are visible to the unaided eye. It is probable that some microscopic factors have not been taken into account, let alone such intangible factors as the moisture content, seed weight, volume weight, viability and genetical quality. But for the purpose at hand, most of these factors can be omitted with good reasons and not at the expense of the results.

So, the quality of seeds is determined by the extent of the presence of split, shrivelled, deformed, and insect bored seeds, zoological species and inert matter. Seed splitting, chipping and coat breakages occur mainly during the post harvest preparation. During thrashing, drying and possibly storage, several seeds are subjected to great forces which lead to these physical damages. This is a technological problem.

Shrivelling and deformation are probably due to genetic and nutritional factors. A heterogeneous plant population will hardly mature uniformly and mineral deficiencies may lead to growth retardation so that at the time of harvest, immature and retarded seeds are harvested together with the well developed ones. On drying, the immature and

retarded seeds will shrivel or be deformed in some ways. Pest attack on seeds at earlier stages of growth may have a similar effect. Seeds deformed this way have low nutritional value and impart undesirable flavour when accidentally cooked together with good ones.

To the consumer, the presence of insect bored seeds bears a negative connotation apart from reducing the nutritive value per given weight of seeds. In the seed samples studied, 13-46 per cent of the seeds were insect bored. Besides the effect on the eatability, insect bored seeds provide a medium for other pest and parasitic attack and a centre for the escalation of insect attack. In this way, insects feed while men starve.

Zoological species and inert matter are introduced at any stage after the harvest. In addition to the damage done by the zoological species, they and inert matter do reduce the palatability of the grains.

The list of quality factors discussed in the previous page is not exhaustive but could act as subjects for improvement measures. A coordinated three pronged approach to improvement possibilities is suggested below. This embraces the institutional, production and the consumption aspect of the leguminous grains industry.

There ought to be grades and standards in relation to food crops set up by statutory instruments or otherwise. These then will guide the producers, agriculturalists, processors, consumers and policy makers in matters pertaining to these crops.

Given these standards and grades, agricultural scientists would then have concrete goals to which their researches are directed as far as the optimum cultural practices, breeds and varieties, disease and pest control, methods of harvesting, storage and transportation and quality control are concerned. In the same way, the extension workers and farmers will have clearer goals to pursue.

The Consumption component of the improvement measures may be divided into two for the sake of discussion. In the first instance, the consumers should be made aware of their rights as consumers and act accordingly. Generally speaking, our consumers are very passive as far as quality control is concerned. In very few cases does one get to feel the force of the consumer on business conduct and quality enforcement. This is probably because for a long time the economy has been highly import dependent for consumer goods and as such the producers are physically and conceptually far removed from the consumers, consequently the 'take it or leave it' philosophy developed widely. Anyway, with the consumer's active participation in quality control, the sellers will sooner or later respond accordingly.

Secondly, if more food crops were consumed through the marketing machinery, hopefully, the volume of transactions in food crops will reach such a level as to use the present facilities to capacity. If our nutritionists, home economists and womenfolk could devise more new recipes using mainly these food crops, more uses of these crops will, obviously, be found, the rate of consumption will increase and the overall demand will rise. One other way in which consumers could be helped is through price control. Price control works effectively only if the consumers co-operate in giving information concerning diversions from the established prices. However, once price control is in operation, the sellers will have to adopt non-price means of competition. There are several of these but quality improvement would be the first one to come.

SUMMARY AND CONCLUSION

The marketing of some food crops in the Soroti area is subject to several drawbacks, notably quality and price variability where the former does not explain the latter, especially at the retail level. At the farm level, the same pattern exists but is nullified in effect by the low prices paid to the farmers.

Although the PMB is concerned with the marketing of food crops, there is a large outflow of produce from the farms that bypasses this organisation. This has the effect of negating the efforts of the PMB, let alone keeping it in darkness as far as the real food marketing situation goes.

However, given time and facilities, most of these drawbacks could be reduced in effect if not totally eliminated within a reasonably short period of time. This would better be done through an inter-disciplinary approach supported by a far looking policy and a co-ordinating organisation capable and willing to innovate.

In conclusion, more emphasis should be placed on the development of the food crops. Our two major cash crops: cotton and coffee, face a market which is highly competitive and close to saturation. Although these two crops are most important at the national level, this attribute is diminishing fast at the farm level. If the farmer's lot is to be improved, food crops might grow in importance.

However, there are several factors that ought to be considered in relation to the development of food crops. Are the rural credit facilities geared to improving the production of food crops? Do we have enough knowledge and technology to develop the food crops industry? What is the role of the co-operative movement and the FMB in the development of the food crops? What about that of the Department of Agriculture? Is it not possible that the marketing chain of the food crops is too long?

These and other similar questions ought to be answered in practical terms if the food crops are to play their rightful role in the Ugandan economy.

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