

RESEARCH INTO THE ECONOMICS OF PEASANT FARMING IN KENYA:

A CRITICAL APPRAISAL.

MAKERERE
INSTITUTE OF
SOCIAL RESEARCH
RURAL DEVELOPMENT
PROJECT

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1. INTRODUCTION

The purpose of undertaking research into the economics of peasant farming is to obtain information which can be used in planning and formulating Agricultural Development Policies on a national scale, on groups of farms or on individual farms. Investigations into the economics of peasant farming in Kenya have been going on for the last decade. Most of the work has been undertaken by the Farm Economics Survey Unit (F.E.S.U.) a branch of the Economics and Statistics Division in the Ministry of Planning and Economic Development. The Unit has so far published twenty-two reports but only four of them (13, 15, 18 & 21) cover the peasant areas; all the others cover large scale farming. Reports Nos. 13, 15 & 18 cover three Districts in the Rift Valley Province, namely Mandi, Elgeyo and West Pokot. Report No. 21 covers Nyeri and is the result of the first large scale survey of the economics of peasant agriculture. At present the Farm Economic Survey Unit is continuing with investigations in other peasant areas as well as on the new settlement schemes.

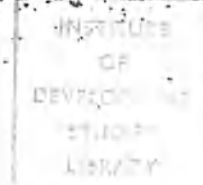
Other investigations have been undertaken by individuals, notably, Dr. E. S. Clayton of Wye College (London University) and a former economist with the Kenya Government. His work is to be found in his monograph, 'Economic Planning in Peasant Agriculture - 1963', and other publications listed in the Bibliography. More recently a survey has been undertaken in the settlement areas by R. Clough of Egerton College - Kenya.

It is hoped in this paper to review critically some of these investigations, namely Clayton's work and the Farm Economics Survey Unit Reports, with emphasis on the methodology employed. At the same time the assumptions on which some of the analysis is based will be discussed. These assumptions can affect the exactness and applicability of the results to a very large extent. The different investigators have reached some conclusions and made some recommendations - these will be examined in the light of the realities of peasant farming situations. Finally it may be possible to suggest modifications. To avoid any confusion the work of the Farm Economics Survey Unit will be reviewed first.

2. SAMPLING PROCEDURE

(i) The Sample Unit

The aim of the investigations by the F.E.S.U. is described at the beginning of every report but perhaps the best summary is in the Nyeri Report (No. 21) where it is stated:- 'The main purpose of this work, and all other economic investigations of African farming was to obtain information which could be used by the Agricultural Department and other Government bodies to assess the economic aspects of Agricultural Development Policies and for further planning. As such it was necessary to investigate those farms where the people came nearest to adopting the practices recommended by the extension service. Thus the farms studied were purposely selected by the agricultural staff. They



represented not a cross section of the farming community but a small group of farmers whose technical operation was thought to represent the best in the District.'

Thus only progressive farmers were included in the sample. The vital question here is whether the information obtained from such an unrepresentative sample of the population can have any valid use for further planning. In peasant farming, the adoption of new techniques to increase production is limited by a number of social, economic and technical factors. If we accept that progressive farmers are innovators then it is to be expected that they have greater risk-bearing capacity and have access to more productive resources than the less progressive. In practice, the agricultural officer when selecting the progressive farmer does not do it on the basis of the profits being made but rather by visually assessing the holding. If the farmer has followed all the advice, i.e. fencing, water supplies, paddocking, keeping of exotic livestock, etc., and his farm appears neat and tidy he is automatically labelled progressive. What is forgotten here is that the progressive farmer is likely to have over-capitalised his farm and is perhaps not making as large a profit as he could have made in the short run. Frequently such farmers subsidise the farm business from other sources of income. The assumption is also implied here that extension advice in running the farms is the best from an economic point of view. Further, progressive farmers represented a small fraction of the farming community and there is no indication of this in the report.

It is further stated (Report No. 15) that the studies are important in providing the following information:-

1. The patterns of farming that are followed by these progressive farmers.
2. The production methods that are employed and the levels of output performance that are obtained from the different major enterprises.
3. Some of the factors that prevent farmers from producing more and increasing their incomes.
4. The value of granting loans to farmers for different purposes, and the farmers' ability to repay these loans from the increased production that arises from their use.
5. The attitudes of these farmers to their holdings and their improved production methods employed thereon as a source of income and prestige.

With respect to 3 and 4 above it is very doubtful that the information could be secured from progressive farmers. Since the majority of peasant farmers are in the 'basic subsistence plus' situation it would have been more reasonable to take a representative sample from the whole population.

Certain factors that should have been discussed in these Reports are not discussed in all of them:-

(ii) Farm Size

This is discussed and shown in the Rift Valley case studies but not in single enterprise studies in Nyeri. All we are shown in the Nyeri Report is the aggregate acreage of each crop studied. It is probable that the farm size will influence the levels of inputs for the different activities of the farm. Furthermore, it is most likely that progressive farmers have farms well above the average size for holdings in the District. As such it is unlikely that information relating resource allocation to the size of holding could be obtained.

(iii) Sampling Fraction

The survey in Nyeri was concerned with obtaining information from the following enterprises: coffee, tea, pineapple, pyrethrum, milk production and pig production. The sampling fraction for each enterprise is not discussed and if one takes the number of farms

studied for each enterprise and compares this with the total acreage of the crop the anomalies become obvious. For example the total number of coffee farms studied was 53, totalling 32.03 acres of coffee - the total acreage of coffee in Nyeri District at the time of survey in 1962 was 6967; the total number of tea farms was 41 totalling 22.92 acres - total District tea acreage was 1412 acres in the same year. The corresponding figures for pineapples were 23 farms totalling 10.55 acres while total District acreage was 125, etc. Thus sampling error varies between enterprises as the sampling fraction is not the same throughout.

(iv) Distribution of Sample Holdings

Another related problem which should have been discussed was the distribution of the selected farms in relation to the existing ecological zones. One can excuse the F.E.S.U. on the grounds that all the enterprises covered involved all the four ecological zones, i.e. tea in the High Broken Zone, coffee in the Star Grass and Zikuyu Grass Ecological Zones, pineapples in the Grass Woodland Zone, etc. However, some of these enterprises, e.g. coffee and pyrethrum are found in more than one ecological zone. It is to be expected that the ecological differences, i.e. soil, climate and altitude may affect the levels and pattern of inputs and input-output coefficients. It is gratifying to note that the selection of farms studied by Dr. E. S. Clayton was based on ecological zones.

(v) Visiting Frequency

The visiting frequency of the part-time enumerators varied widely according to pressure of other work. The visiting frequency depends very much on the data being collected and whether or not the farmers keep records. In this case input-output and financial data was being collected. One would expect that such data collection requires very frequent visits as the farmer is unlikely to keep remembering it for a long time and some operations will have been more accurately recorded than others.

On the whole then it is obvious that the F.E.S.U. investigations are subject to high sampling and recording errors. The results cannot have a statistical significance as progressive farmers are atypical of the farming community. The Reports do not tell us all the economic, social and technical factors prevailing in the major sector of the farming community. This is because no account was taken of stratifying the selection of holdings according to farm size and/or the stage of development of representative farms. Perhaps the greatest return to extension effort would accrue from simple improvements on the majority of the farms while at the same time giving encouragement to the innovators, i.e. the progressive farmers.

3. PROBLEMS OF SINGLE ENTERPRISE STUDIES

The resource situation differs on different farms and when considering a single crop, the level of inputs in any one year will definitely affect the level of inputs in the following year. The F.E.S.U. while conducting Single Enterprise Studies in Nyeri took representative acreages of the same crop at various stages of development in the same year. The point is that the levels of inputs say in second year coffee, do not bear any relationship to the levels of inputs of third year coffee when studied in the same year. However, this is a question of whether enterprises should have been studied over several years, or studied as was done in one year. It should be noted, therefore, that the results cannot be very reliable as no account has been taken of the year to year variation of factors the farmer cannot control. Such variables as climate and biological factors affect both profits and factor inputs.

The farms studied for each stage of each enterprise are few (e.g. "Coffee Farms in 1st Year"). For this reason the input of one factor on one farm will seriously affect the average input of that factor for all farms. A good example is the case where one farmer used fertilizer in his crop while the others in

the same group did not use any fertilizer. Nevertheless the level or cost of fertilizer was expressed as an average for all farms. If more farms had used fertilizer the average would be very different. This emphasizes the need for a larger sample if the data is going to be generally applied.

The study of single enterprises on multiproduct farms is likely to have a number of shortcomings. Most important is that there is no indication of the opportunity costs of the factors of production in alternative uses on the same farm; whole farm studies would have provided such an index.

4. LABOUR

The study of labour used in peasant farming usually involves a lot of problems because of the many classes of workers (men, women and children), hence the lack of standardisation of labour type. Some tasks like herding of cattle can be done equally well by either adults or children, while others like hoeing can only be done by adults. During the Rift Valley Survey Whole Farm Businesses were studied, labour was not allocated to any particular enterprise and was simply shown under the heading of wages and cost of rations. But potential family labour on the farm was not measured and the best estimate we have was an indication of the number of adult workers in the family. Later, in the Nyeri District Survey, the cost of hired labour was listed separately and labour provided by the family was valued separately 'to see what the cost would have been if all work had been done by hired labour'. No attempt was made to work out the labour profile in Nyeri.

There are two types of analysis possible for labour (a) In Ex-poste analysis it may be useful to give a value to family labour in order to indicate the return to the farmer's Management and Investment Inputs. Perhaps an even better approach would be to calculate some efficiency index expressed in returns per man day or manhour on the whole farm or for each different enterprise. (b) In Ex-ante analysis, i.e. the planning of farms, it is necessary to know the labour profile and the marginal opportunity cost or marginal productivity of labour in various enterprises in order to allocate available labour in an optimum manner. This is the approach used in optimal programmed solutions for individual farms or groups of farms.

- In the first instance there will be situations where the opportunity cost of family labour outside the farm will be very low. In this case calculations of returns per man day for the unpaid family labour will indicate the level of management. Where alternative employment does exist then it would pay to calculate the Marginal Opportunity cost outside the farm and within the different enterprises in the farm.

The F.B.S.U. Reports do not attempt to do this but go as far as listing hired labour and unpaid physical inputs separately in Nyeri. In evaluating family labour they used the following figures as average rate of payment for an hour's work. All the figures are in cents:-

	North Tetu	Othaya	Mathira	Average
Men	28	20	28	25
Women	22	13	23	21
Children	16	10	18	15

It is not shown how these values were arrived at but one can assume that they were calculated from the daily wages paid to casual labour for the different classes of workers. Anyone familiar with the situation in Nyeri would agree that these values are misleading. There are at least three ways of hiring labour in Nyeri District:-

- (i) The regular worker who has been, until recently, very uncommon. The need for regular labour has increased with the establishment of

cash crops such as tea and coffee which require some minimum labour inputs throughout the year besides the high requirements at particular peak periods. Here one can easily assume a standard working day and from the monthly salary calculate the rate per hour. We are not informed that this was what was done.

(ii) The casual labourer who is paid on daily, weekly, or monthly basis as long as he is wanted. Here again it is possible to reduce the wages to per hour rates assuming a standard working day. This type of labourer is common but his days are numbered because of reasons given under (iii) below.

(iii) The casual labourer who is paid by task. In this category a man may be paid say 5 cents for every pound of green tea leaves plucked, or for a pound of coffee cherry picked from the tree. Again a man may undertake a contract to hoe so many acres at a certain rate per acre. In all these cases the amount of money earned does not depend on the number of hours spent on the task but rather on the actual task undertaken. Employers and employees, especially on farms with perennial cash crops, are finding this system more rewarding. The casual labourer or regular labourer gets his one shilling or two shillings per day irrespective of whether he worked hard or not.

In view of all these factors, it is difficult to think of the basis on which the F.E.S.O. valued their labour. Labour inputs were measured for the whole year and then valued at the rate shown per hour. It would have been better to list the amount of family labour and, after getting the gross margins, calculate the return per manhour. This could be compared with equivalent indices in other enterprises and in fact indicate the marginal productivity of labour in these enterprises. This subject of the evaluation of labour will be examined again in connection with Dr. Clayton's work.

5. CAPITAL INVESTMENT

Capital in the form of land, buildings and works, implements, etc. is valued in the case studies in the three Districts of the Rift Valley. The value of these is the average of the nominal opening and closing valuations for the full year under consideration. Land is given a value of 240 shillings per acre. From the total capital invested and the net farm profits the Return on Capital has then been calculated. This is a very valuable index as it is a measure of profitability of the farm business as well as the level of management and technical efficiency.

On the other hand this index is expressed in terms of returns to land and it would also have been useful to calculate returns to labour of various crops and opportunity cost of labour over the year. The returns to capital over the whole farm is given. This is good but once again was land realistically valued? The gross margin approach is not used nor is there any attempt to formulate improved systems. In West Pokot draught power and labour are the most limiting factors, yet returns on capital (per acre) are all that we are given.

The valuation of land by giving it a flat value of 240 shillings per acre is misleading. One would have thought that it would vary with production potential as indicated by the income stream and probably the ecological zone.

The way investment is treated in the Nyeri report is interesting. It is stated that two major projects were undertaken:-

- (1) An investigation of the cost of developing and operating the major "cash crop" enterprises being developed in the district and the relation of these to returns, and
- (2) An investigation of the labour work inputs involved in these enterprises.

For each enterprise the time is estimated which each enterprise takes until the total value of production exceeds all costs. In doing this no interest rate is attached to the money thus invested as cash input. There are at least two factors to consider here.

1. Any money used as inputs in these enterprises is a form of capital investment. At the same time this money could have alternative uses in other enterprises. It would have been reasonable to indicate the opportunity cost of this money in each enterprise by giving it a compound interest rate equivalent to what it would have earned in the next best alternative. Peasant farmers have high opportunity costs for the little cash that they possess. Alternatively all costs and receipts should have been discounted to the base year at the same rate.

2. The second factor here is that most of the money used to establish these enterprises is usually loan money which has to be repaid plus interest. In this case investments in the farm should have an interest rate too. This was not done in the calculations and all we are shown is the accumulating annual totals (costs and receipts).

6. OTHER ASSUMPTIONS MADE IN THE F.F.S.U. REPORTS

Certain other assumptions in the Reports need commenting on. The chapter on Dairy Cattle in Report No. 21 for example raises an interesting point. Under the "Economics of Milk Production" it is stated:-

"For the purpose of this study it was assumed that milk is the only saleable product of the grade cattle studied, and that the cows would replace themselves. While this means that no depreciation charge on the breeding stock need be made, it also implied that young stock surplus to the replacement need were not valued as production. Though some value would inevitably be created from this source, the study was designed to show only the economics of milk production."

While the author acknowledges that some value would inevitably be created from the sale of young stock surplus to the replacement need, he is not prepared to include this in the economics of milk production. It would have been better to study the Dairy Enterprise as a whole. Further, it is shown that 10% of the total amount of milk is fed to the calves which provide the surplus stock which are later sold to other farmers. It appears unreasonable, therefore, to isolate milk production from the enterprise as a whole.

The F.F.S.U. states in Report No. 21 that the results reveal some odd trends, e.g. the amount of milk retained by the family as more became available; the apparent irrational variation in the proportion of work that was done by hired workers, etc. This latter aspect is rightly attributed to the size of the business as a whole. This emphasises the need for whole farm business studies, so that the decisions made by the farmers will appear less irrational.

7. DR. CLAYTON'S WORK

(i) Introduction

Dr. E. S. Clayton's monograph, "Economic Planning in Peasant Agriculture", is a presentation and discussion of the programmed solutions obtained when data, applying to six farms, had been processed by computer to produce maximum profit programmes. The selection of his farms was based on ecological zones and this is very reasonable. Unfortunately, only part of the data was collected on the farms themselves. The main sources of the data used were Farm Institutes from peasant areas in both Central Province and Western Kenya (i.e. Sinba, Kapsabet, Kisii, Kabianga, Wambugu and

Embu). From these Institutes information, relating to average labour requirements for the various enterprises, was collected and used in the programmed solutions. It is notable that only one of these Farm Institutes (Wambugu) is found in the Central Province. In his publication "Labour Use and Farm Planning in Kenya"¹, dealing with the collection of the above-mentioned data, there was very little mention of linear programming. It is doubtful, therefore, whether the information was originally intended for linear programming. Clayton states that the main purpose of the study was "to increase our knowledge of the economic relationships which characterise Peasant Agriculture...." and ".... to show how a knowledge of these relationships can strengthen the validity of governmental policies aimed at raising agricultural productivity." All these aims can be achieved through linear programming - a mathematical technique which produces an optimum plan maximising profit when all the constraints have been identified. The use of linear programming in peasant economic situations is limited by the availability and accuracy of the data. The problems associated with collecting accurate data are very complex and the use of data, derived from Farm Institute Records, for peasant farms is questionable, as the peasant farmers do not have access to the same resources, and work within a different motivational framework.

The six farms covered represent six alternative situations, i.e. the coffee/tea, pyrethrum/coffee, pyrethrum/tea, pyrethrum, coffee and tea situations. The farm sizes for the various situations are 7.2 acres, 9.3, 8.3, 4.0, 4.4 and 8.6 acres respectively. Although it is claimed that "the selected farms represent important size groups found in Nyeri", one would doubt the contention that they are typical of many farms situated in that part of the country. It would have been better to take more farms of different sizes in each alternative situation.

(ii) An Appraisal of the Programmed Solutions

Some of the programmed plans would appear very unrealistic to anybody familiar with peasant farm situations. For example, plans 17, 49, 53, 54, 55, 69, to quote just a few, produce solutions with a grass ley area of less than 0.3 acres. Clayton justifies this by assuming that this area added to the homestead area will support one cow. It is very doubtful whether any homestead area would provide more than 0.5 acre of grazing. This contradicts the fact that the carrying capacity, according to the same author, is 1 - 1½ acres per animal unit. Such a small area carrying one animal would be subject to the risks associated with seasonal shortages of animal feed. What would have been reasonable would have been to establish or introduce another restriction in the matrix, i.e. a minimum unit for the ley-and-milk activity.

In very many of the programmed solutions relatively large areas are left fallow, e.g. in plan no. 69 there is a fallow area of 2.0 acres in a 4.4 acre smallholding; plan 85 leaves 5.8 acres fallow in an 8.6 acre farm. This implies that an intensive system of production has been selected where only a single product is produced on the holding using all available inputs. A less intensive system with more than one activity would be more realistic in a peasant farm. With population density of 809 persons per square mile (1962 census) and hence a high pressure on the land, it would be a difficult task to persuade the farmer to adopt a plan which maximises profits by depending on only a single enterprise. It is doubtful, in any case, whether all peasant farmers maximise profits. The fallow/single enterprise situation is pushed further until we get 7 acres of tea and 0.2 acres fallow. All those familiar with peasant farming are aware of the reasons why a peasant farm is a multiproduct business. A single enterprise farm would carry a high degree of risks. It is

1 E. S. Clayton, Journal of Experimental Agriculture Vol. 28, No. 110, April 1960

a fact that there is a universal desire of every peasant farmer to be self-sufficient in food. It is unrealistic, therefore, to think that, in a small farm, relatively large areas would be left fallow, and that a peasant farmer can devote his whole farm to only one enterprise. On the other hand, it would be more realistic to build in more constraints to reflect farms' objectives and desires.

Throughout Clayton's discussion, changes in the situation from one plan to the other in each holding are based mainly on the introduction of mechanisation (4-wheel and 2-wheel tractors) and/or the hiring of more labour. The latter is through the successive addition of an extra adult worker regularly for a whole year. The assumption that tractors can be hired in Nyeri is rather unrealistic. In the first place 2-wheel tractors are totally unknown in Nyeri; trials were conducted at the Wambugu Farmers' Training Institute and on peasant holdings in 1960. Some of the two-wheeled tractor engines broke down inside forty hours. Four-wheel tractors can be used but difficulties would be encountered because of the large number of farmers involved. Secondly, the adoption of mechanisation would depend on the relative costs of labour as compared with tractor operations. With some farms in the small acreage group there would be no need for mechanisation, while for the larger farms there is no evidence at present to indicate that tractor operations would be cheaper than hand labour. Finally, with production of permanent cash crops and livestock on a small scale tractors would only be necessary for the opening of land. The only land which needs opening on farms in Nyeri is the $\frac{1}{2}$ - 1 acre of ley every year and it is easy for hand labour to do this before the rains start. However, one cannot rule out the possibility of hiring four-wheel tractors on the large farms but these are an exception rather than the rule.

The treatment of labour deviates from what actually happens in practice in Nyeri District. The pattern of agricultural development in this area is based on high value cash crops (plus livestock) with high labour requirements at certain peak periods of the year. Regular labour may be employed to provide the basic labour inputs required minimally throughout the year. But at the peak labour requirement period casual labour is employed either on a daily or weekly basis, or by task. The hiring of regular workers for a whole year is very rare and it is a pity that so much discussion is based on assumptions departing from practical realities on the farm. Until these assumptions conform to practical realities the conclusions reached cannot be fully accepted as valid.

8. SOME CONCLUSIONS AND POLICY IMPLICATIONS

The foregoing discussion has shown that the sampling procedure employed by the Farm Economic Survey Unit was not adequate for the purpose of the information sought. In both the Unit's and Dr. Clayton's analysis, labour was treated in a way which did not conform exactly to the practical realities in peasant farming. Dr. Clayton did not introduce enough constraints in his programmed solutions and as a result most of the solutions are unrealistic. It is to be admitted, however, that some valuable information is provided by the data.

The presentation of the Farm Economic Survey Unit work is very reasonable, and the District's farming conditions well described. The rhythm and pattern of farm work, daily and seasonal, however, is not so well described. This would have included part of the social structure which may affect the pattern of farming.

The section on loans is particularly well discussed and justifies one of the aims of the Unit, i.e. the evaluation of granting loans to farmers and the farmer's ability to repay. At the same time, the chapter on the differences between the two areas, namely Elgeyo and West Pokot Districts, is very stimulating. It is a pity, however, that the discussion could not be backed by

by recorded data from more typical farms.

While acknowledging that economic research in peasant farming is a difficult task, it cannot be denied that if the information is to be of any use a large representative sample of farms is necessary. Such a sample would include farms of all sizes, farmers with varying attitudes to farming and should be based on existing ecological zones. Such surveys should be undertaken for more than one year. In this way, the social, economic, climatic and biological factors which limit production and hence the restrictions that prevent farmers from adopting extension advice can be clearly identified. It is gratifying to note that the investigations in Nyeri are being continued and this time on a whole business basis.

Those engaged in this type of research should be familiar with the social and economic organisation of the people they are dealing with as these factors affect the pattern of farming. On the other hand, the investigators are not familiar with the problems of the peasantry, the decisions that the farmers always appear irrational.

The problem of collecting labour input data and the cost of data has not been solved yet because of lack of any standard system of employing labour. Different classes of labour are hired at different rates and this varies from one place to another. If the aim is to find out the labour requirements for different enterprises, then it will be enough to record labour input in man-days or man-hours. But if the aim is to include the costs of production this will involve the recording of family labour while at the same time listing hired labour and cash inputs separately on individual farms. Calculations of the opportunity costs of family labour and marginal productivity outside the farm and within the farm (between the various enterprises) will provide valuable information for planning farms.

The Farm Economic Survey Unit's data, good as it is, cannot be used for optimal programming as only single enterprises were studied in Nyeri and hence there is no indication of marginal opportunity costs of labour in different enterprises within each farm. Labour profiles are not provided, which means that the various labour constraints within different activities are not known. With the information provided we can only calculate efficiency indices in the different enterprises generally but this would only show us the level of profit for these enterprises. If whole farm businesses had been studied we would have been able to indicate efficiency and productive potential of each enterprise within a farm - this is very valuable information in farm planning.

The F.E.S.U. should have gained enough experience in data collection and analysis by now. It is to be expected then that present and future studies will provide information which can form a firmer basis for future agricultural policy and forward planning. This will not involve any appreciable additional cost because all that is needed is refinement of technique and methodology. In any case any additional cost will be worth it if the information obtained is more representative and applicable. It might be concluded that Clayton attempted sophisticated techniques with crude and inadequate data whereas the F.E.S.U. have so far failed to utilise fully their more sophisticated, yet in many ways still inadequate, data in order to indicate farm improvements. The Kenya Extension Service still awaits the benefits of a well-designed Farm Management Survey specifically aimed at providing information to be used in Farm Planning.

BIBLIOGRAPHY

This discussion is based on the published work of the Farm Economic Survey Unit (F.E.S.U.) and Dr. E. S. Clayton's Monograph (see below). The publications of the F.E.S.U. cover both peasant and large scale agriculture in Kenya but the discussion is on those Reports dealing with peasant farming. These reports are:-

- Report No. 13 - April 1963 - "Some Economic Case Studies on African Farms in the Rift Valley Province in 1961".
- Report No. 15 - Dec. 1963 - "Some Economic Case Studies of Farms in Elgeyo and West Pokot Districts 1962".
- Report No. 18 - Feb. 1964 - "Some Economic Studies of Farms in the Nandi District 1962-63".
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