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THE EFFECT OF THE DIFFUSION OF NEW AGRICULTURAL AND RELATED
TECHNOLOGIES ON INCOME DISTRIBUTION AMONG RURAL PEOPLE IN KENYA.

By

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October 1972.

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Abstract

Equitable development is one of Kenya's current objectives, and will increasingly be emphasized in the next plan period. Yet, there is considerable evidence to suggest that development is far equitable at present, partly for political reasons, and partly because of autonomous development processes tend to foster inequity.

This paper concentrates on such autonomous processes in rural development and proposes research to uncover present trends in equity differentials in rural areas which result from the diffusion of new income generating technologies in agriculture. The proposed research also hopes to identify likely forces which accelerate inequitable development and which can be manipulated to produce greater equity.

The proposed research, will be a panel study. That is, a sample of Tetu farmers who were interviewed in 1970 on adoption behaviors, will be interviewed again on similar variables to produce insights in trends and processes. In addition, more detailed information will be gathered on variables describing levels of living; consolidation of economic as well as political power, etc.

The study forms part of the Tetu Special Rural Development Programme's (S.R.D.P) extension pilot project which aims at developing replicable methods for equitable rural development through the dissemination of new technology to farmers who have remained or lagged behind in the scramble "to make it".

PROBLEMS AND GOALS:

"Desirable economic growth is that which is reflected in actual improvement in education, health and living conditions of the majority of our people (G.C.M. Mutiso) 1."

The desire in Kenya to build a nation based on the principle of fair and equitable distribution of incomes amongst the total population, has been clearly expressed in various declarations and publications that have been put out by KANU* and the Government since Kenya attained its independence in 1963. The KANU Manifesto for instance states that: "We shall therefore strive to attain the fastest rate of economic growth and to secure a just distribution of the national income, both between different areas of the country and between individuals."² This manifesto was published in 1963, first and foremost, as an election campaign document. However, as soon as the party was elected to power in the same year, a second document "The Sessional Paper No. 10"³ was published. This new document, was no more than an amplified fashion of the original document and in it we find similar sentiments on the distribution of the national cake as those contained in the manifesto. For example, Sessional Paper No. 10 isolated six objectives which would be pursued by the new nation state in its attempts to achieve a society molded along the philosophy of African socialism. One of the six objectives stated that: The.....

Government will endeavour to achieve a high and growing per capita income, equitably distributed (p. 2, vi)"

The sentiments expressed in these two documents were later explicated in the development plan of 1964-69⁴ which was, however, shelved as soon as the hurried nature of its preparation became apparent (The plan was shelved under the code name "The Red Plan". However, a revised and more detailed Plan (code named "The Green Plan") of 1966-70,⁵ was prepared on the basis of the red plan. In this revised plan, we find the same philosophy as contained in the previous documents. Thus, this plan stated that: The very emphasis on the Plan on a fair distribution of the results of economic progress means that those of us who already have well paid jobs in the modern sphere of the economy cannot expect our lot to be improved as rapidly as that of the less fortunate". These three documents (The KANU Manifesto, The Sessional Paper No. 10 and the 1966-69 Plan) all suggest the ideology which the Party and Government adopted after independence as the basis for the country's development efforts. The writers

* KANU: KENYA AFRICAN NATIONAL UNION.

of the three documents appear to have been more concerned with asserting the philosophical base of the ideology than with its application.

An ideology, stated or implied has two aspects according to S.S. Mushi⁶ and others. These authors recognize two aspects of a given ideology, (1) The Pure Ideology based on values (moral and ethical concepts of "right" or "wrong", "good" or "bad"), and (2) The applied ideology based on "Rules" which prescribe behavior in concrete situations and which can therefore be expected to have practical consequences. Usually, ideology type two is based on ideology type one in that, the former is simply an operationalization form of the latter. Using this classification, of mushi and others, one can say the KANU manifesto, the Sessional Paper No. 10 and the Green Plan of 1966-70 fit the Pure ideology rather than the applied ideology. In other words, these three documents did not provide explicit "Rules" or even explicit "strategies" through and by which the National objectives contained in them could be achieved. The current Development Plan 1970-74⁷ aims at remedying this shortcoming. In it we find the formulation of a major shift in strategy. The new strategy was aimed at achieving the objective of equitable distribution of incomes. Thus in its preface, the plan states that "Rural development is the basic strategy of this plan. for it is our aim that the fruits of development be shared amongst the mass of the people as a whole, not just amongst a few. (Preface iv)"

The Plan now in preparation (1974-78) goes much further. As a result of such events as the *ILO Mission on unemployment, mounting pressure in parliament, and the realization of the inadequacy of past and present measures to slow the widespread increases in inequity, the next plan focuses on three inequity gaps:

- (1) The gap between urban and rural sectors (the differential having been identified as being 5:1)
- (2) The gap between geographical areas (Districts), and
- (3) The gap between the various income groups within an area.

To fill the first gap, the emphasis on rural development will be greatly strengthened. Signs of this greater emphasis were provided

* THE INTERNATIONAL LABOUR ORGANISATION MISSION TO KENYA ON UNEMPLOYMENT MARCH 1972.

by the 1972 Budget speech, which introduced increased taxes on mostly urban consumer goods to provide for more funds for rural development. The next Plan itself will stress the further implementation of the already initiated District Planning Policy, i.e. the Plan will be District specific, which will also allow the filling of the second gap more easily.

To fill the second gap even further, the plan will, for the first time in Kenya's Post Independence history, allow the use of criteria of equity and employment provision next to economic growth criteria, in the assessment and selection of projects. Hence, it will allow spending funds in areas where returns to investment are not optimal for growth but necessary for the improvement of social welfare and employment conditions in such areas. In fact, as a result of the ILO Mission report, each recommendation in the plan will be looked at from the point of view of employment and equitable development, while areas will get resources and service allocations which are not tied to their resource endowment*

To fill the third gap, the plan will introduce a definite incomes policy. Also there seems an increasing conviction among Government officers that Government Services should be directed more to the poor, even at the expense of lowered output. However, such a conviction does not seem to be held by all officers within the echelons of the civil service.

From the foregoing, it is quite clear that one of the most cherished objectives of the Kenya Government is equitable distribution of the National income across the mass of the people. However, as we have already stated earlier, between a stated objective and the achievement of that objective, there lies a world of difference. It is one thing to formulate an objective or a goal in any undertaking, but it is another thing altogether to be able to formulate feasible strategies aimed at achieving that objective. One of the main bottlenecks in solving this problem is lack of data and other relevant information about the process one is trying to control, and effects of past efforts to control the process. Realizing this fact, we have

* Information about the 1974-78 plan has been gathered by the author from a series of Provincial Seminars that were given by the Ministry of Finance and Planning and also from lectures given to District Development Officer Trainees at the Adult Studies Centre, Kikuyu by MFP officials.

decided to focus our attention in this study to the close examination of the distribution process in our national economy and particularly on the question: To what extent past and present strategies employed by Government development machinery has affected the achievement of the national objective of fair and equitable distribution of the fruits of independence?

Given our present resources of time, personnel and finance, we realize that we cannot carry out a comprehensive study as suggested by our question for the whole economy, in spite of the fact that such a study is urgently needed. To this end therefore, we have decided to limit ourselves to the rural agricultural sector. After all, more than 80% of our population lives in the rural areas and the majority of that population (about three out of every four), depends on agriculture for earning a living. But again, the rural agricultural sector is itself too large and complex. Therefore again we have chosen to specifically examine this sector in a small area of the country. We hope that our findings viz-a-viz our research question, will be indicative of what is happening in the small-scale agricultural sector of our economy with regard to the distribution of incomes.

For our purposes then, we have chosen Tetu Division of Nyeri District, Central Province, as our area of study. The decision to limit ourselves to the study of the rural agricultural sector in Tetu Division, has been prompted by the following reasons:-

1. That about 80% of Kenya's population lives in the rural areas and that about three quarters of this population depends directly on agriculture for earning a living.
2. That the development of agriculture therefore forms the major vehicle through which the lives of the bulk of Kenya's population can be improved.
3. That Tetu Division has been chosen by the Government as one of the six pilot "Special Rural Development Programme (S.R.D.P.)" areas in accordance with the recommendations of the Kericho Conference (1966)⁸ and the Moris - Hoyer - Ireri Report⁹. The Institute for Development Studies of the University of Nairobi was commissioned by the Kenya Government to carry out a base - line research, experimentation and evaluation of the Tetu programme. Consequently, a team of researchers from the Institute, has been engaged since 1970 in carrying out various research, experimental and evaluation projects in the Division. The author of this proposal is a member of this team. This proposed study, therefore, aims at supplementing the on-going research, experimentation and evaluation projects in the Division.

4. That the, a "baseline study"¹⁰ of the Division has already been completed and that some of its findings have revealed a marked development gap existing between individual farmers in the Division. The gap was identified through the construction of a farmer progressiveness index which was based first on the number of a given list of income generating innovations a farmer in the sample had adopted and also on the relative earliness he adopted any of these innovations viz - a viz other farmers in the Division (p. 15).¹¹ Thus, 26% of Tetu farmers were found to be most progressive (i.e. had adopted most of the income-generating innovations over the longest period of time), 27% were found to be Upper middle progressives, 29% were found to be lower middle progressives whereas 18% were found to be laggards (i.e. those farmers who scored zero on the progressiveness scale or who in other words, had so far not adopted any of the income-generating innovations that were studied). Looked at another way, this means that since income accruing to farmers in Tetu Division are derived from the eight income-generating innovations that were studied (i.e. Hybrid maize, coffee, Tea, Pyrethrum, Certified Potatoes, Macadamia nuts, grade cattle and pigs), those who were identified as laggards were getting zero incomes from these innovations whereas the 27% most progressive farmers were getting the highest incomes from these major agricultural income-generating innovations. The two middle groups (Upper middle progressives and lower middle progressives), were getting incomes lower than the most progressive farmers but higher than the laggards.

The Tetu S.R.D.P. baseline study provides a unique opportunity, not only for studying the effects of S.R.D.P's accelerated development efforts on equity, but, more generally, the examination of the process which govern equitable development over time. The 1970 baseline study allows us to carry out what is called a "panel study" that is, a repetition of the 1970 study two years later. Such a repetition allows the identification of trends, and possibly, of those factors associated with observed trends. Hence, such a study seems promising in allowing the formulation of recommendations which would allow government to improve its ability to achieve equitable rural development.

Thus the proposed study will be a phase II baseline study with the objective of comparing the 1970 situation and the 1972 situation regarding the following variables:

(1) The adoption of income generating innovations; (2) the degree to which the most progressive farmers have entrenched themselves in exploiting the farming wealth and resource endowment of the division (perhaps at the expense of the poorer majority); (3) the total share of government services like extension, credit and education facilities that has been taken up by the wealthy farmers; and (4) consumption patterns and differentials, in an effort to try and document the gaps in the levels of living as they exist and change between the four classes of farmers identified in 1970.

THEORETICAL BACKGROUND

Agriculture is the backbone of Kenya's economy. It is even more so for the Kenya's rural areas where the majority of the population is located. The type of agriculture practised in the rural areas is based mostly, on a system of farming characterised by a high degree of subsistence production, resulting from low productivity of both land and labour resources. With such a system of farming, per capita cash incomes are usually very low or absent altogether. This system of farming has evolved from the continued application of archaic methods of production based on the continued use of low yielding crop and livestock "varieties" combined with the use of traditional husbandry techniques. Yet, modern technology comprising of new, high yielding crop and animal as well as improved husbandry techniques are available or can be made available, to allow for the successful transformation of this system oriented to subsistence production to a system geared to market production.

Such a transformation based on the substitution of archaic methods of production with production based on modern agricultural technology depends on the successful development of such technology and its dissemination to and diffusion in the social system whose past methods of farming are found to be wanting. Given this our admittedly limited, orientation to development, we base our theoretical considerations on the work done by adherents of the "Diffusion of innovations" school of thought.

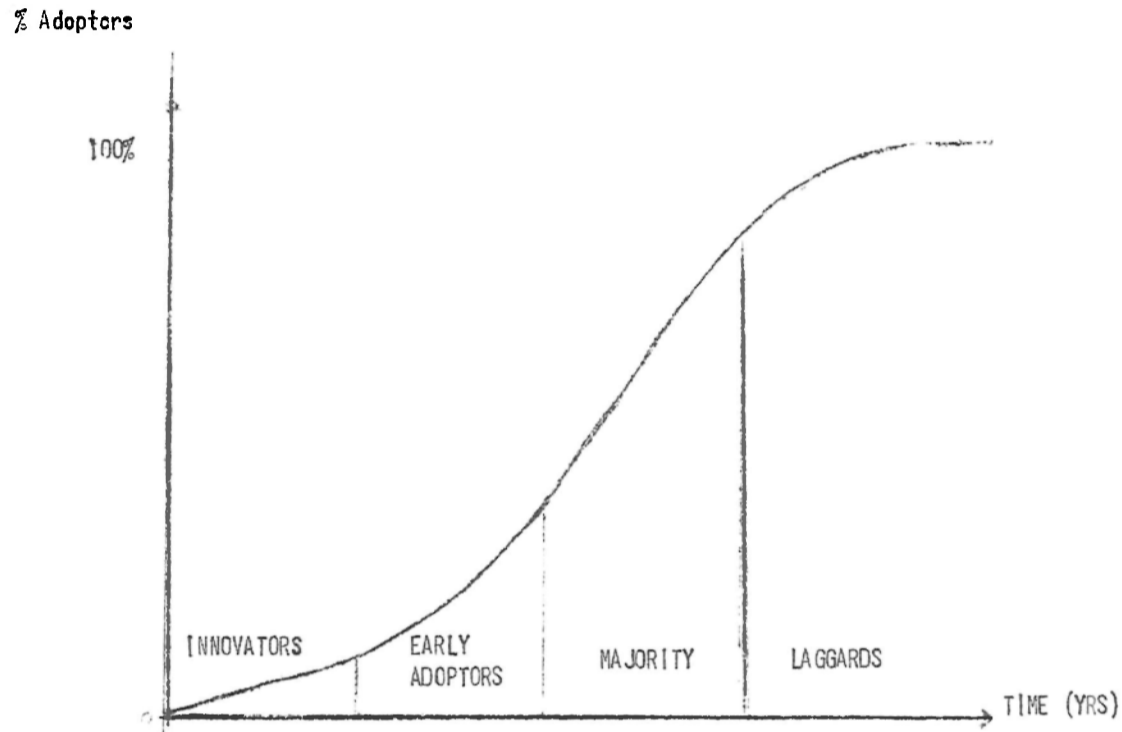
The central elements of diffusion theory are (1) the innovation (defined as: An idea, practice or object perceived as new by an individual or members of a social system); (2) which is communicated through certain channels; (3) over time; (4) among members of a social system.¹² The implication of diffusion theory, is that, the degree to which income generating innovations have been adopted in a social system, can be used

as one measure of that social systems level of income and it's level of economic development. Thus an increase in the rate of diffusion and adoption of income-generating innovations can, according to the theory, result in an increase in the level of economic development of that social system. It appears then that, developmental strategies (in the form of the introduction of desirable income-generating innovations) geared to increasing the incomes of people in a given social system (e.g. farmers in a rural area) must at least aim at disseminating and diffusing income-generating innovations to the social system.

The diffusion of innovation research tradition has developed a number of generalizations about the diffusion process which are based on more than a thousand empirical studies,¹³ carried out all over the world. One important aspect of the diffusion of an innovation among members of a social system is that not all members adopt the innovation at the same time. Some members adopt the innovation earlier than others. Those who adopt earliest are referred to as Progressives (progressiveness here being defined as: "The degree to which an individual is relatively earlier in adopting a new idea than other members of the social system")¹⁴ That is to say, those who adopt earlier are more progressive than those who adopt later. At this point, one might then ask: why should some members of a social system be more progressive than other members of the same system? Diffusion researchers have managed to isolate various factors that seem to differentiate progressive members of a given social system from the less progressive. For instance, it has been found in many parts of the world that more progressive people are richer; have larger farms; have more education; hold more leadership positions and have more contact with the world outside their social system through mass media exposure, travel and contact with change agents, than the less progressive farmers.

The process by which an innovation diffuses through a social system can in fact, be described as follows: The innovation is initially adopted by a very small group of highly progressive (innovative) individuals who learn about the innovation through mass media exposure, travel or contact with change agents. This group is soon copied by a slightly larger group composed of notables, people with high socio-economic status who cannot risk their positions in the community by innovating unless it seems beneficial to do so. From then onwards, the innovation spreads at an accelerated rate, snowball fashion, largely through word-of-mouth until most people in the community have adopted it. The last to adopt are the poor unventuresome individuals referred

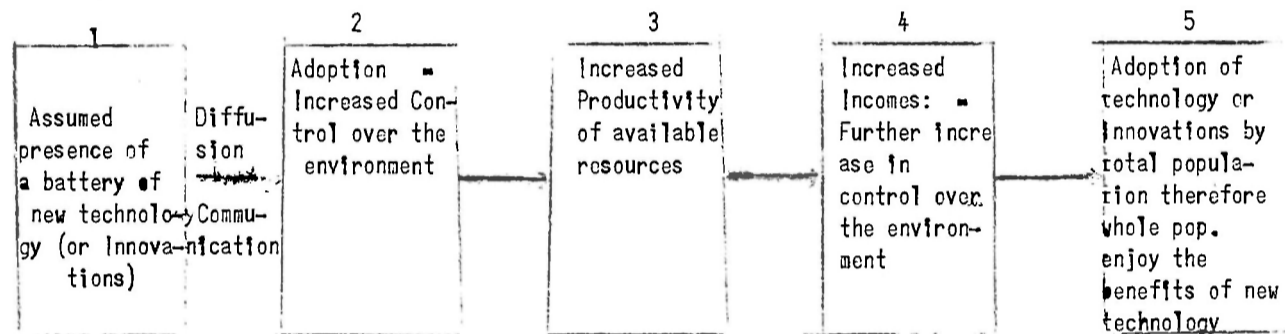
to as "laggards". Thus the diffusion process theoretically takes the following shape.



In a nutshell then, the diffusion of innovation researchers tell us that this is the pattern of diffusion of innovations that is observed around the world. The pattern has been documented so often (including Tetu Division) that it seems inevitable. One is told, for instance, that it is useless for a change-agent to visit the "laggards" or the less progressive farmers, because they will adopt last anyway and then only on the basis of word-of-mouth advice of fellow farmers and not on the basis of change agent advice.

Consequently, the diffusion theory ends up giving an ideological underpinning to the "Progressive Farmer strategy", according to which the change agent can optimize his impact by concentrating his efforts on the most progressive (and therefore wealthiest) farmers who are quick to grasp (or is it to grab?) new innovations and who have the money (and probably other advantages) to implement them. One thereby maximizes the pay-off from limited resources of the change agent (Extension worker). What is more the diffusion process will (we are told), ensure that innovations will spread throughout the community Until all it's members have adopted it. Thus, the progressive farmer strategy not only maximizes the direct impact of the change - agent but is said to also maximize his indirect impact.¹⁵

But alas, we beg to differ from the predictions of the diffusion theory, especially as far as it assumes (1) that the increased adoption of innovations leads to increased incomes, which will (2) accrue to all members of the social system by virtue of the fact that the diffusion process will ensure that all members of the social system adopt the innovations. But we differ from these arguments and also on the arguments on which the "Progressive farmer strategy" is based. Our differences can be best viewed from the examination of the following model which we have derived from the diffusion theory.



This model represents the assumptions of diffusion theory. For instance, the diffusion theory presupposes (1) The existence of a battery of innovations (or new ideas, practices or technology) which can be diffused to a social system through appropriate communication techniques; which (2) is adopted first by an innovative individual or group of individuals as a result of which that innovative individual or group of individuals acquire a greater control over their environment due to the application of the superior technology. As a result of this newly acquired control of the environment, the individual or group of individuals are (3) able to raise the productivity of their resources of land, labour, capital and management which in turn results (4) in increased incomes which allow the individual or group of individuals to acquire an even higher degree of Control Over their environment through further adoption of other innovations, or even through further increased productivity of resources. Finally, since the diffusion process according to the diffusion theory will complete itself, (5) The majority of the population will adopt the new innovation, and there-by be able to enjoy similar benefits to those enjoyed by the few who adopted first. Since all members of the social system will eventually adopt the process would thus ensure a fair and equitable distribution of incomes resulting from the adoption of the new innovation.

In reality however, this may not be the case because:-

(1) The dissemination of knowledge about the new innovation usually favours only one group of individuals at the expense of the majority of the population. For instance the findings from the baseline survey conducted in Tetu showed that extension workers (a major vehicle for diffusing innovations in rural areas) concentrated on the progressive farmers. The study noted that: "In almost every department of extension activity, the more progressive farmers receive disproportionately greater attention from government extension staff than laggards" and goes further to state that indeed nearly two fifths of the laggards, compared to none of the most progressives, have never been visited by an extension officer of any kind during the last year (1969) p. 27"¹⁶ If such laggards are infrequently visited by extension workers, it is difficult for them to come to hear and subsequently adopt new innovations introduced in their social system until they eventually hear about it through the inaccurate grapevine.

(2) It is not always the case that the adoption of an innovation, leads to increased productivity. Some innovations may require special inputs in the form of other innovations before their full potential can be realized "eg The Package deal". Now if one farmer only adopts one item from the package and none of the others, he might end up in lowering his productivity instead of increasing it. For instance, the farmer who adopts hybrid maize seed alone, and omits the adoption of other requirements like fertilizers, proper spacing, early planting, early weeding, pest control etc may end up realizing lower yields than he would have otherwise got from planting local maize seed instead of hybrid.

(3) The adoption of an innovation, even if it leads to increased productivity, is no guarantee that such adoption would lead to increased incomes. There are factors that make this assumption untenable:

(a) Increased productivity may result in over production which in turn leads to gluts in the market culminating in producers being paid prices that are below the breakeven point.

(b) Increased productivity may require the use of more inputs to the point where the production of any given commodity becomes unprofitable. In any case, increased use of more inputs, raises the demand of the inputs and if such demand exceeds supply, producers may find themselves paying higher prices for these inputs. If this happens the cost of producing the commodity rises and this lowers the profit margins.

4. The predictions of the diffusion theory that the diffusion process would always complete itself in the long-run, i.e. that in time, all members of a given social system would be able to adopt the innovation, is unrealistic. It is particularly unrealistic in the field of farming for the following reasons:

a) If the innovation is geared to the production of export commodities, the governments of the producer countries have usually no control of the quantity produced especially by other producers and this may lead to over production and in turn lead to international restrictions on production e.g. through quota restrictions.

Such restrictions could be imposed on young producer countries whose potential production of the commodity have not yet been fully exploited. The imposition of such quotas forces producer countries to pass laws forbidding further production/ adoption of that commodity. In Kenya we have already witnessed this with coffee. The International quota restriction on coffee production was imposed in 1965 when our potential production had hardly been exploited. Following on the imposition of the quota, the government enacted laws prohibiting further expansion (acreage as well as growers) and as a result of this, many small-scale farmers who had the potential for the production of coffee were unable to adopt it. Currently, there are rumours circulating in various influential quarters that, Kenya may very soon find herself facing another quota restriction on tea even though the small-scale tea production programme has not yet touched the majority of potential tea producers. When such quotas are imposed, those who are lucky enough to have adopted such crops continue to enjoy incomes from them, incomes not enjoyed by those who are prevented from adopting the same crops through such prohibitive laws. One can argue that since such crops are not the only available income-generating innovations in farming, the farmers who are unable to adopt the prohibited commodities can always adopt other unrestricted innovations. However, while this is true, it is also true that those farmers who happen to have adopted the new restricted innovations, will also be candidates for any other new innovations introduced in their area since no laws prevents them from doing so. If these farmers also adopt the other innovations then their level of incomes would never be equal or even nearer the level of incomes of the other farmers who were prohibited from adopting the innovations that had a quota restriction. Thus in time, there would be a marked lopsided distribution of incomes in such a social system especially if the incomes accruing to the members of such a system come mainly from farming.

b) All members of a social system may fail to adopt a given innovation even in the long-run because some of them and these could be quite a sizeable number, might not have the necessary resources required for the adoption of such innovations. Some members may lack sufficient land,

capital, labour or even managerial skills that are necessary for the adoption of a given innovation. Now, unless some mechanisms for providing such people with the extra resources required for adoption were instituted, then, such people, would never be able to adopt such innovations. This could be particularly the case where the distributive mechanisms for extending to farmers necessary services required for the adoption of such innovations (e.g. credit, extension etc.) continued to be made available to the most progressive and usually most wealthy members of a social system while the least progressive and usually the poorest members of the same system received none or very little of these services. A situation like this has already been observed both in Tetu, Kisii and Vihiga Divisions.*

5) Even assuming that the diffusion process would complete itself and that all members of the social system would be able to adopt a given innovation in the long-run, there would still be a problem of equitable distribution of incomes. This problem would come about because those few innovators who adopt earliest, would in the first instance be able to enjoy extra incomes from this innovation if it succeeds during the time the majority of farmers are holding back and waiting to see whether the innovation would succeed or fail. Such extra incomes would be in the form of pioneer or windfall profits that would result from the higher prices the early innovators would get from the commodity due to its limited supply. Extra saving on costs of production would add on to the pioneer profits. This extra savings would result from the fact that, at the early days, the prices for inputs necessary for the production of the new commodity would be lower due to limited demand. Such prices would rise as soon as more people adopt the innovation and start demanding more inputs. Also at the early days, the early adopters may get government subsidies offered to try and encourage more producers to adopt an innovation but such subsidies may be removed as soon as the majority of producers adopts the innovation. Again such a thing has already occurred in Kenya. Previously, farmers used to get fertilizer subsidies of up to 40%. Today, such a subsidy has been drastically reduced even though the majority of small-scale farmers have just started to use fertilizers in larger quantities than ever before. This means, that those who have just started using fertilizers will have their potential profits reduced by a percentage equal to the cut in the subsidy. All these added together, would mean that the early innovators of innovations would enjoy higher incomes at the early stages and this higher incomes would enable them to accumulate and grab "more of the limited good". One would then not expect the majority of farmers to be able to even catch up with this small group of innovators unless the diffusion process was deliberately manipulated so as to remove all the bottlenecks that stops the majority of producers from adopting innovations at the earliest opportunity.

Thus, where innovations are left to diffuse through a social system in the manner predicted by the diffusion theory, a situation can easily develop whereby a small minority of people would adopt all the money making innovations while the majority would be left with little or no incomes. In that case, one would probably find "a group of ten (10) millionaires amongst ten (10) million beggars". This type of development is not without precedents. In India for instance, the "Green Revolution" resulting from the rapid diffusion of "miracle" rice and wheat, has evolved to the point where "the benefits derived from those innovations remains unevenly distributed giving rise to serious political unrest (Brown, 1970)."¹⁸ Such situations appears to be prevalent especially in the countries of the third world. Their prevalence appears to have motivated a recent speech by Robert McNamara, the President of the World Bank, in which these countries were warned about the need to iron out their own massive inequalities in income. He went further to say that ".... the failure of the third world to deal with it's own poor (about 40% of the total population), is also a threat to peacea situation which cannot be tolerated for too long a time by any government hoping to preserve civil order.¹⁹ " It is in the light of such disturbing revelations of the consequences of the type of developments that lead to situations where the rich get richer and the poor poorer, that we have decided to look into this question of income distribution among the rural population with the hope that, if our study comes up with findings which show a worsening trend in income distribution among rural farmers, we will be in a position to recommend to Government various steps that it can take in arresting the situation.

Here in Kenya, the majority of modern agricultural innovations and especially the income-generating types, have been introduced via the "Progressive Farmer Strategy" of which we have already spoken. In fact, the introduction of the major income generating agricultural innovations, which started as soon as the swynnerton plan²⁰ was accepted by the then colonial government in 1954, followed the "Progressive Farmer Strategy" swynnerton seems to have been fully aware of the consequences of that type of diffusion. In his report he states, for instance, that: "In future, if these recommendations are accepted, former government policy will have to be reversed and able energetic or rich Africans will be able to acquire more land and bad or poor farmers less, creating a landed and a landless class." "This", he continued, "is a normal step in the evolution of a country. (R.J.M. Swynnerton, 1954"²¹). Swynnerton was apparently thinking in the lines through which his own country, Britain, had evolved. Unfortunately he appears to have forgotten the fact that such an evolution took place in Britain and elsewhere only after the Industrial sector of Britain had grown sufficiently to have been able to absorb the millions of the landless that were thrown out of agriculture. But the reality of the Kenyan situation then, now and even in the foreseeable

future, is that, our Industrial sector has not as yet developed to the level when it can absorb landless people thrown out of the land by such policies. Thus such a recommendation was immature and ill - conceived. Never theless, the report and it's recommendations was accepted and adopted by the then Government and it's implementation started in 1956. One suspects that the report has formed the basis for most past efforts geared at the development of Kenya's small-scale farm sector, i.e. efforts which have followed the Progressive farmer strategy, resulting in the present inequitable development.

The time seems ripe now for Kenya to heed the warning of the President of the World Bank. Infact, we saw earlier that the Kenya Government is already seriously trying to redress the situation. Hence, we have undertaken this study in the hope of providing government with information and recommendations which can help it to plan strategies for implementing equitable development.

From our consideration of the consequences of diffusion of new innovations, and some historical processes in Kenya's small farm-sector development, we have formed some expectations and hypotheses which have guided us in the design of the panel study of Tetu farmers. Specifically, we aim to test the following hypothesis:-

1. That the income distribution gap between the most progressive and the least progressive farmers in Tetu Division has been widening rather than closing, over the last two years (1971-1972).
2. That as a result of the widening income gap, between these two groups of farmers, the most progressive and therefore the wealthiest group of farmers, have continued to acquire more resources as well as available but limited government services at the expense of the least progressive and therefore, the poorer group of farmers and that this former group has thus placed itself in a position where it can further increase the income gap.
3. That as a result of the widening income gap between these two groups of farmers, the former group has not only increased it's economic power but that it has also increased it's political power inspite of the fact that both types of powers are limited goods.

4. That as a result of the widening income gap between these two groups of farmers, the high income group has acquired a consumption habit different from the low income group.
5. That the high income group is rapidly consolidating its advantage by giving its children superior education and training probably through extra incomes earned on investments outside farming.

For the purposes of testing hypothesis one, data similar to that collected in 1970, using a similar questionnaire, will be gathered on the same sample that was studied. This will include data on income-generating innovations that each farmer has adopted to date, the length of time since adoption of each innovation, the size of each innovation, land size, labour size, other economic activities each farmer engages himself in as well as estimated cash incomes that accrue to each every year. Since we already have information on these items for 1970, it will then be easy to compare the information we get in 1972 and see whether there are any differences.

As for hypothesis two, again we shall collect data on the type of services each farmer gets now in terms of extension worker visits, FIC courses attended, and number of loans received.

For hypothesis number three, we shall collect data relating to participation in social organisations and office-bearship in the same organisations e.g. KATU, self-help/harambee groups, church and School Committees, Co-operatives, macndelco ya wanawake organisation, and AK clubs. Information gathered on these items will again be compared to that obtained in 1970.

For the testing of hypotheses number four, a level - of - living scale mainly adopted from John C. Belcher²³ will be constructed from questions in the questionnaires that will be asked in the household level of - living.

For the testing of hypothesis five, we hope to gather data on the education of children, jobs held by children, investments, additional pieces of land acquired, etc.

METHODOLOGY

Reference has been made to the Baseline Survey that was carried out in Tetu in 1970. The survey was carried out: "to determine the nature, characteristics and problems of farmers in a high rainfall potential, high population density area of Kenya with a view to designing extension programmes and strategies which significantly increase the efficient utilization of existing facilities, services and resources without unduly escalating the amount of time, effort and finance currently being expended on extension."²⁴ The Survey also aimed at developing a reliable and eclectic enough farmer classification index which could be used to rank order farmers on a socio-economic continuum ranging from laggardliness to progressiveness in terms of agricultural practices, social participation, exposure to external influences, education and such like. The survey was based on a random sample of 354 farmers out of a population of between 12-13,000 farm units. The units of analysis were farm household heads sampled from the Land Registry that contains the names of all registered farm owners in the division.

Data pertaining to the dependent variable (Progressiveness) and the various independent variables were gathered principally via a largely pre-coded interview schedule.

From the data so gathered, a farmer classification index based on progressiveness defined as "the degree to which an individual is relatively earlier to adopt new ideas than other members of his social system", was developed. Individuals studied were heads of farms i.e. individuals who were in day-to-day decision - making (management of the farm). The degree of progressiveness was measured by the number of years since first adoption of each of the following innovations: (1) Hybrid maize, (2) Coffee, (3) Tea, (4) Pyrethrum, (5) Certified potatoes, (6) Macadamia nuts, (7) Grade cattle and (8) Pigs. These are the major income generating innovations in Tetu division as far as farming is concerned. Each farmer was asked how long he had been engaging in each of these eight enterprises and his progressiveness score was acquired by summing up across all eight innovations. Thus, the progressiveness scale awarded farmers a higher-score (1) for having adopted a greater number of the eight innovations, and (2) at a relatively earlier time.

The farmers with the lowest score on the scale were labelled laggards. These laggards, 63 in the sample, scored zero on the scale i.e. they were not engaged in any of the eight innovations forming the progressiveness index. The balance of the sample was arbitrarily divided into three groups of more or less equal size. Thus, for the total sample, 26% of the farmers were designated as most progressive, 27% as Upper Middle Progressive, 29% as lower middle progressive, and 18% as laggards.

The present study will be a panel study designed in exactly the same lines. It will use a similar but slightly enlarged survey schedule, largely precoded and will have as its units of analysis the same respondents that were included in the 1970 survey. This is because we are trying to find out the trend in income distribution between the same farmers over the last two years. The survey schedule has been enlarged to include variables pertaining to house-hold level of living information from which will be used as indicants of level of living between the high and low income farmers.

If possible, an attempt will be made to secure the services of the four Agricultural Assistants who were used in the 1970 survey as enumerators. This is because the four extension agents were prior to that survey thoroughly trained in the techniques of scientific inquiry and as a result they turned out excellent work and at the same time, they were able to create a lot of empathy with the respondents. To this end, we would like to utilize their experience and their ability to empathize with the respondents.

For the purposes of analysis, the raw data when collected from the field will be coded and punched into computer cards and then the information in these cards will be analysed via the I.D.S. counter sorter and the computer in the computer centre of the University of Nairobi.

Field work on the panel study is proposed to be undertaken in the months of November and December, 1972.

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