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RAPID DEVELOPMENT FOR
KENYA'S SMALL FARMS

by

S. Schönherr

&

E.S. Mbugua

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ABSTRACT

The proposed research aims at developing more efficient replicable extension strategies for income generating innovations. The basic concept, theoretically founded, is to change the target groups for the extension service. Traditionally most progressive farmers are being approached to become first adopters of an innovation. The large majority of farmers (less progressives) is reached by a very slow diffusion process only and often the diffusion process completely leaves out a major part of the farmers.

If less progressives (below average) are approached to become the first adopters, the diffusion process from them to the top progressives is very quick and the diffusion process among the target group itself is quicker and reaches more. This is founded on communication - and social stratification factors. The practical problem, however, seems to be the greater difficulty in making less progressives first adopters. This problem could be solved by an appropriate package extension method already successfully tested in the "Tetu - Project". The only major problem with "Tetu", the very limited number of farmers which can be reached by this extension method, could be solved by taking the training out of the FTCs to the field and by approaching the farmers in groups.

Summing up, the research therefore aims at:

- a) further testing of the new strategy,
- b) developing and evaluating methods of approaching farmers in groups,
- c) improving the replicability of the more efficient extension strategies and methods, and
- d) promoting their replication.

RAPID DEVELOPMENT FOR KENYA'S SMALL FARMS

By

S. Schonherr

&

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(Strategies and methods to accelerate the adoption of income and employment generating agricultural innovations by less progressive farmers in small-holder areas).

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1. THE IMPORTANCE OF INCOME AND EMPLOYMENT GENERATING AGRICULTURAL INNOVATIONS

The majority of Kenya's rural population is living in small-holder areas. These areas are very densely populated and the population pressure is extremely high. Since the average farm size is below 7 acres already in most of the small-holder areas, there is practically no chance to meet the population explosion by extensive agriculture. A vast migration out of the small-holder areas is currently taking place. But new settlement areas can absorb only a very few of them. The cities and urban centres - offering attractive jobs to relatively few people - become overpopulated by job searchers from Kenya's small-holder areas. If this migration from rural to urban areas continues - and there is evidence that the rural population pressure accelerates this process even - urban unemployment, slum dwelling, and the potential for social unrest (just to mention a few problems) will reach huge dimensions. The social and economic costs in solving these problems, once they have become very large, are nearly unbearable for a Nation.

Ultimately this basic problem can be solved by a combination of three factors:

- (1) The reproductive behaviour of the population has to change;
- (2) the employment capacity of the urban and rural industrial sector has to grow and
- (3) intensive agriculture through income - and employment generating innovations.

Why do we say that a combination of these factors is necessary? If the reproductive behaviour would change now, suddenly to the two children family (that is an assumption,

which never can be realized practically), population pressure would still continue for about one generation due to the children born already. Therefore the change of the reproductive behaviour as a sole factor can never solve the existing problem.

One could consider the increasing employment capacity of the urban and rural-industrial sector as a solution to the problem. But if one takes into consideration that if the rural population of Kenya increases by 3.5% per annum the urban and rural- industrial sector must increase its income generating capacity by about 35% per annum (taking the ratio between rural and urban/rural-industrial sector as 9 to 1). That would be a very unrealistic expectation.

What remains is the income -- and employment generating potential in the small-holder areas themselves. This potential is still rather high in our opinion.

A few data on Maize growing might illustrate this: The majority of the farmers grow crops on a low or average "production level", a minority on a high level. The Ministry of Agriculture has calculated (for 1972/73) the gross margin per hectare for local Maize per production level as shown in the table below:

Table 1: Gross margin per hectare of local Maize according to production level:

	low	average	high
gross margin	161/=	503/=	846/=

If one could push the farmers of the low production level to average and the average farmers to high, the improvement would be very evident. But this is by no means the end of the potential. If the farmers take over the innovation of Hybrid Maize growing they can improve greatly without changing their production level:

Table 2: Gross margin per hectare of Hybrid Maize according to production level compared with local Maize:

	low	average	high
gross margin of local Maize	161/=	503/=	846/=
	↓	↓	↓
gross margin of Hybrid Maize	476/=	783/=	1,349/=

But since the production level figures are related to the present reality of crop growing they do not reflect the agro-technical capacity of Maize growing. The "high" production level of Hybrid Maize growing is based on 45 bags per hectare. With excellent husbandry a yield of 100 bags per hectare can be obtained. These figures may illustrate the potential for development which does exist in the small-holder areas of Kenya. But there is a wide consensus also that this potential for development is not being exploited sufficiently. Some of the reasons for this could be subsumed under constraints due to the "human factor".

The purpose of our research is the development of methods and strategies to overcome certain constraints of the "human factor". But we are aware of our limitations. All aspects of the "human factor" can never be considered by a few researchers on their own. Since the process of exploiting development potentials is to a great extent an innovation process in itself and since the innovation process is being stimulated and guided by an institution especially created for this particular purpose - the extension service - and thirdly, since within the extension activities the constraints of the "human factor" are, so to speak, crystallized, we focus our research on the national extension service. Improved extension methods and strategies are a crucial necessity for for accelerating rural development.

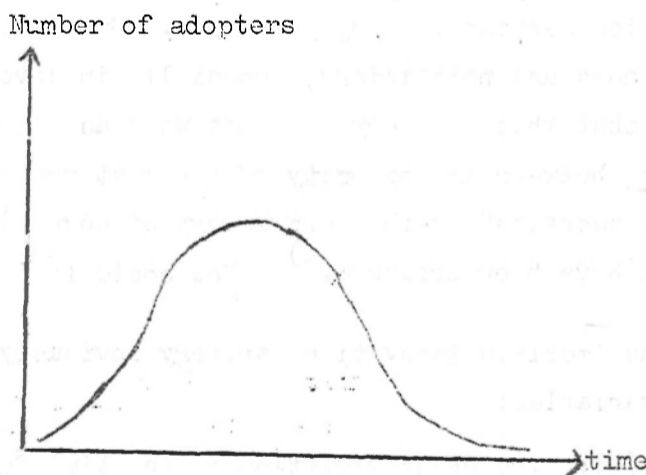
2 THEORETICAL CONCEPT.

2.1 Theoretical foundations for new extension strategies

The extension strategies developed and applied within the last 10 years were usually based on innovation theories developed by US-American Scientists¹⁾. In short these innovation theories say:

(1) In a social unit (e.g. farmers in a certain area) an innovation is being adopted at first by a few only. Through further communication the innovation diffuses to others, and then reaches more and more (like the snowball system); it has its peak after a certain time, and then slows down reaching the last ones of the unit. The diffusion process over time takes a course which can be shown in a graph:

Graph 1: The diffusion process of an innovation in a given social unit



(2) The diffusion process reaches different categories of people in different stages of the process. The

1) The first comprehensive systematization of the "innovation theory" was done by E.M. Rogers; Diffusion of Innovations, New York 1962.

categories can be defined by certain (psychological, social and economic) characteristics of persons. People with certain characteristics first adopt an innovation. People with certain other characteristics follow them soon and so on.

- (3) Once a certain percentage of people in a given unit have adopted an innovation the diffusion process continues "automatically" according to the above description.

This theory seems to bring great advantage to the extension agents if they follow the lines suggested by it:

- (a) Identify the people in a given unit with the characteristics of the first adopters.
- (b) Bring them the innovation.
- (c) Once they have adopted, the diffusion of the innovation will run "automatically" and reach a great number of people without any effort from outside.

Obviously this strategy was adopted with great enthusiasm by the extension service in many countries. But recently, a growing number of researchers and politicians, especially in developing countries, have realized that this strategy does not work as expected: Great inequities between the minority of the most progressives ("innovators" and "early adopters" in the terminology of Rogers) and the rest of the population have been produced.¹⁾ How could this occur?

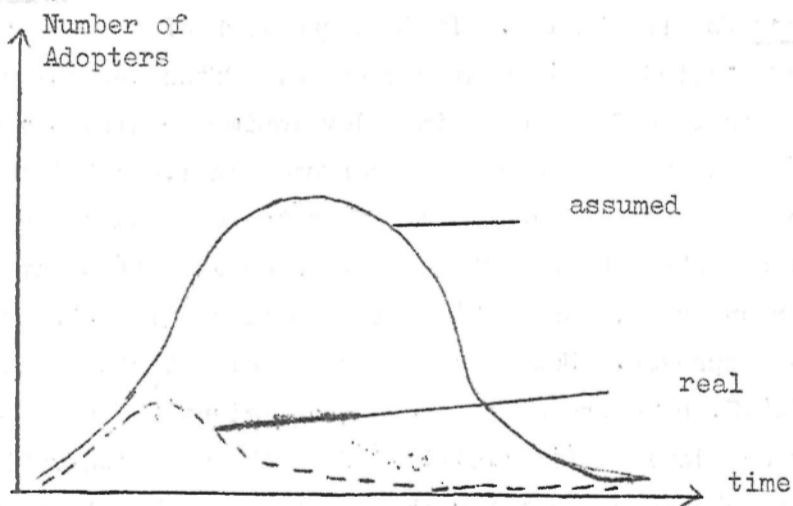
The American innovation strategy obviously had neglected two decisive variables:

- Variable (A): The great variation of the time factor in the diffusion process when the theory is being applied in rural societies of different development stages;
- Variable (B): Great variation in the range of the diffusion process. Under different socio-economic conditions the range of people reached within the given unit can vary very much.

1) One has to consider that the "natural" innovation process (that is the diffusion of innovations independently from the extension service) is going the same adopter lines.

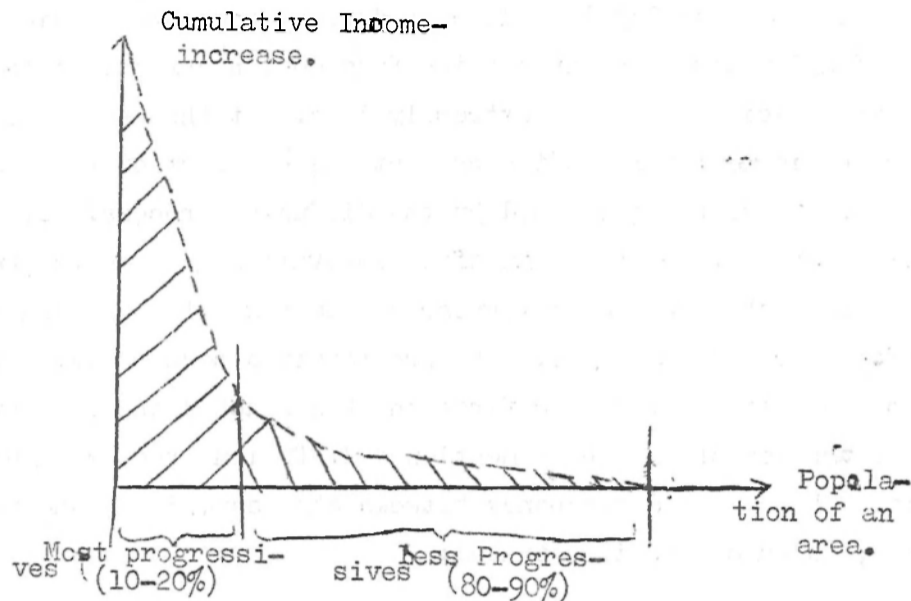
In economically less developed rural societies obviously the time of diffusion of an innovation from most progressives to less progressives is often extremely long. At the same time social and economic constraints often prevent a great part of the less progressives from ever being reached by the diffusion process. It stops and leaves them out. Innovation after innovation come to the people of an area. Each time the most progressives take it up. Each time it is income generating for them. The progressives might have adopted the tenth innovation before the first one has reached the less progressives. The assumption of the above mentioned diffusion process is no longer valid. There is a discrepancy between the assumed and the real diffusion course, which can be illustrated:

Graph 2: Discrepancy between the assumed and the real diffusion process for each innovation.



Finally the accumulation of each of the real course of diffusion results in an economic situation, which can be drafted as follows:

Graph 3: The income generating effects following the cumulation of the innovation processes.



This income inequity produced by the present extension structure is not only a problem of the social structure and the values of greater equity and justice. It is also a severe problem of economic efficiency for the Nation. It is a question of a less efficient allocation of limited development resources. Often one comes across the statement that no Government in a developing country has so many resources that they can approach each and everybody in its development efforts. And then it has been argued that first these resources have to be utilized by the most progressives - to ensure efficient utilization and later one can think about redistribution policies. We do not agree with that approach. New extension strategies tested by Researchers of the I.D.S. have proved to be more efficient¹⁾. This new extension strategy was derived (implicitly) from the same innovation theory. But the conclusions drawn for the practical application were quite different:

- (a) Identify less progressive farmers (progressiveness-stage below average.)
- (b) Produce a strong effort to make them adopters of the innovation.
- (c) Their status fellows (same progressiveness-stage) can identify themselves and communicate with the adopters and are much more likely to become adopters too automatically".
- (d) All others of a higher progressiveness- stage will take over the innovation from the less progressives very quickly.

1) N. Roling, F. Chege, J. Ascroft; Rapid Development for Kenya's Small Farms, Discussion Paper No. 173, I.D.S.

Two advantages are seen in this approach:

1. The diffusion process from bottom to top is much quicker than vice versa.
2. The diffusion process reaches many more potential adopters.

The difference for the extension machinery is the higher effort necessary to make less progressives successful adopters. But obviously the economic benefits of the new strategy are incomparably higher than the relatively small additional extension effort.

2.2. Competing Theories.

Our theoretical foundation is basically a communication approach. But there are other important theoretical aspects also which can intervene in the communication process. Depending on the social structure and certain economic conditions the intervening factors might even prevent the working of the innovation process described above.

The social structure approach takes into consideration the fact that the structures of the societies relevant for the innovation process are not only based on certain characteristics (progressiveness) which favour or not the adoption of innovations. Each innovation touches the interests of certain classes in the society and each diffusion process tends to enforce or change certain hierarchical structures. Depending on the different access to political power, market control, etc., which varies from society to society, certain groups can control adoption and diffusion of innovations.

We assume that this aspect is not decisive for most crop innovations in the small holder areas of Kenya since the relevant hierarchical power structures seem to be very undeveloped there. But this assumption has to be considered as a hypothesis with the chance of being disapproved.

Other theoretical approaches say that the agricultural innovation process is basically dependant on the access facilities to the inputs necessary for the adoption. This aspect focuses on the economic capability of farmers to carry out the additional necessary investments for improving their outputs. The conclusion of this approach is that the adoption is a result of appropriate

input provisions (e.g. on credit base).

Our hypothesis considers input provisions as an additional condition with increasing importance the higher the necessary inputs for the innovation are.

3. FEASIBLE EXTENSION METHODS FOR THE NEW STRATEGIES.

To make less progressive farmers adopters of new crops, new husbandry methods etc. is more difficult than with the most progressives. For the innovators among the farmers, a few good tips in a talk with innovation agents, some literature, or a demonstration may be sufficient to make them adopters. One reason why certain farmers are less progressives is the problem that they cannot adopt agricultural innovation on the basis of a talk with an extension worker, some information from an advertisement, or an occasional demonstration seen by him. The less progressives must be trained in at least two subjects:

1. Motivation to adopt the innovation,
2. The know how to grow and use the innovation (skills).

3.1 Special training for extension agents.

But in the present extension machinery only a very few extension agents are able to give that training. To motivate less progressives requires not only general teaching skills but also certain communication skills and certain curricula too. Therefore the first need is special training for the extension agents themselves¹⁾.

The experiences taken from Tetu suggest that a short course should be conducted for each and every innovation the extension agents are going to promote. Each innovation needs a specific method and strategy for the diffusion process. The agents must have a thorough knowledge about those.

1) In the I.D.S. 'Tetu Project' this was carried out in a special course of one week and under the assistance of the Institute of Adult Studies, Kikuyu.

3.2 Demonstrations: It is important to stress the fact that demonstrations as the sole extension method in most cases do not work efficiently for less progressives. Demonstrations therefore should be considered only as part of a more comprehensive extension programme. But although demonstrations as a sole measure for the adoption process are not expected to produce a rapid adoption and diffusion process, they might be very important as an integrated part of a training programme.

A completely new crop (for a certain area) could be introduced much more easily if it is not just an idea told by some officials. People want to prove whether it is true what they are told. People want to see how something new looks like and especially farmers want to see how a new crop pays when farmers like themselves¹⁾ try it.

Besides this, everybody concerned with rural development most probably wants to test how a new crop grows and pays under the management of ordinary farmers without involving too much risk (demonstrations are carried out on a small scale).

3.3 Extension training for farmers: If an extension programme is founded on demonstrations only, too many questions would be left open for most of the less progressive farmers. Preventing them from adopting the new crop. Also it would be too risky for many of them also to depend on the extension staff alone since the ratio between farmers and extension staff is too high for everybody interested in a new crop to be supervised by the AAs or JAAs thoroughly.

1) We suggest that a new strategy be tried in selecting demonstration farmers. In the past, all too often the most progressive farmers have been chosen for demonstration plots. This has been found to be an ineffective method of reaching less progressive farmers because they can not identify with the results on a farm so dissimilar to them. The selection of less progressive farmers can be done by either (a) establishing a criteria for identifying less progressive farmers and then choosing persons meeting the criteria or, (b) explaining the purpose to groups of farmers and allowing them to select the persons.

Where to get good seeds from? What about timing? Spacing? Weeding? How to harvest and to thresh? How to store and to sell it? many of such questions remain unsatisfactorily answered if the farmers had a look to the demonstrations only. These and other questions would prevent a rapid adoption and diffusion even of a high paying new crop. The Tetu-experiments proved very persuasively that a thorough training of the farmers for the cultivation and all other relevant aspects of a new crop (1) increasing the motivation for adoption among the farmers very much and (2) enabled them to grow the new crop on a rather high standard. Only by this thorough training (which included practical training) the full understanding of all necessary steps to grow the crop successfully was reached.

At the present stage of the development administrative set up we consider two ways of training for extension as appropriate:

- 3.31 FTC-extension training: To quote the experiences of the Tetu Extension Project, the training was done at the Farmers Training Centre. In 2 1/2 days courses (for the courses a special curriculum was developed) the farmers-in groups of about 50 each - gained the necessary motivation for adoption as well as the knowledge and skill. (This statement was proved by an adoption rate of above 98% of the nearly 800 participants, which were small-holders with an agricultural progressiveness stage below average).

The method of training in the FTC has certain advantages. It can be controlled and administered rather easily and, what seems to be the strongest point, the selection of the participants (e.g. according to their progressiveness stage) can be planned and controlled very exactly. The disadvantage of the training for extension at the FTC is the very limited capacity to train people. The limitations are very severe since training for extension proves useful only if it is done shortly before the planting season. Practically, it

means that courses can be held twice (often only once) a year within the period of 6 weeks before the planting. Even with the greatest effort barely a thousand farmers can be trained each year which is hardly enough to be called "rapid development".

3.32 Extension training for groups in the field: Another method of training for extension is to take the training to the farmer. But we would like to stress that it is not just consultation but real training. And we would like to point out that this method is poor compared with the FTC approach if the training is done on an individual basis. The essence of this second method is the group approach. Selected groups of farmers get training in their own locality (whether in the fields, in schools, churches or other places is a minor question).

By this method many more farmers can be reached than by the FTC, since the TAs, AAs, JAAs specially and very carefully prepared for this task could be split into small teaching units, each reaching as many or even more farmers than one FTC. This important advantage was discussed in a meeting of the MOA in June 73 and strongly supported.

If one decides to take up the method of taking the extension training to the farmers one should consider combining the demonstration activities with the extension training from the very beginning. The following procedure could be discussed:

- (a) Approach groups of farmers (probably they have to be constituted first) in selected localities (sublocations) and discuss with them the new crop.
- (b) Let these working groups make the decision which farms should be selected for the demonstration.
- (c) Teach these groups (or representatives of them) in the new crop growing and supervise the demonstrations which are under the management of the respective groups (or their individual members).

Successful completion of such a demonstration cum training programme would mean that in the following season a large number of farmers in the selected sub-locations could adopt the new crop.

- 3.4 Input provision: The trouble getting good seeds, correct fertilizers, dusts etc. may prevent many from adopting, although they are motivated and have the knowledge and skills to grow a new crop. At Tetu the input supplies were organized centrally and each participant of the training course knew exactly when and where he could get the necessary inputs. This made the adoption of the new crop very easy for the farmers.

We would like to mention that there are certain innovations which need high inputs which possibly can not be met from the less progressive's own resources. If a well organized credit system can be guaranteed it should be no problem to supply the inputs to less progressives on a credit basis¹⁾. In this case the "what about loans?" has to be incorporated in the extension training as a special subject.

If there is no well organized credit system it is not advisable to select new crops for a wider adoption which need high inputs. According to experiences elsewhere a weak credit organization leads to bad debts, which may create an atmosphere resulting in negative attitudes towards the whole extension programme amongst officials and farmers.

Reiterating the methods for the new extension strategies, we suggest the following steps for making less progressive farmers successful adopters of agricultural innovations:

1) At Tetu the collection of the repayment has not yet been done. Even so more than 80% have repaid their unsecured loans without being specially approached for them.

1. Give special training for extension agents (in skills and communication as well as in the methods and strategies to be followed).
2. Combine demonstrations with extension training.
3. Train farmers for skills as well as motivation.
4. Train farmers in groups.
5. Arrange for the necessary input supplies.

4 RESEARCH CONCEPT

4.1 Research approach

Our basic research approach will be the action research. By action research we mean researchers will engage in the concrete development process which will provide feed back through evaluation of development measures, projects, programmes, instruments etc. for the planners. This feedback again has the function of enabling the planners to improve their development actions. By this research approach we hope to make extension methods and strategies more suitable for replication. Our research policy and the research direction is based on the Research Programme of I.D.S. on "Rapid Development for Kenya's Small Farms", carried out by Roling, Ascroft, Choge, Kariuki and others. We consider our research proposal as a continuation of the same programme.

4.2 The variable system and hypotheses.

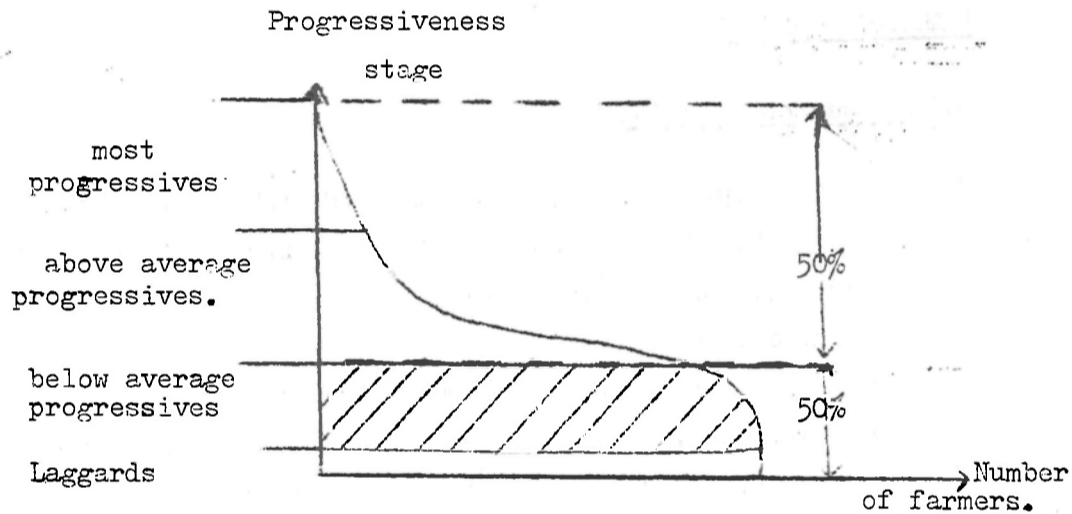
We have distinguished between "strategies" and "methods". According to this distinction we work with two variable systems.

4.2.1 Variable systems and hypotheses for extension strategies:

As independent variable (IV) we consider the target farmers approached in an extension project. The target farmers are classified by the criteria of their progressiveness stage. In our strategy concept the following classes of farmers are of interest:

the most progressives (10 - 20%)
 the above average (but below most) progressives (30 - 40%)
 the below average (but above Laggards) progressives (30 - 40%)
 the Laggards (10 - 20%)

Graph 3: The assumed progressiveness distribution scale



As dependent variables (DV) we consider the speed of the diffusion process amongst the different progressiveness classes of farmers and from class to class (intra - and interclass diffusion).

- DV₁ amongst most progressives.
- DV₂ amongst above average but below most progressives.
- DV₃ amongst below average but above Laggards.
- DV₄ amongst least progressives (Laggards).

Our strategic hypothesis is:

- (I) If JV (most progressives)
 - DV₁ high
 - DV₂ decreasing
 - DV₃ little after long.
 - DV₄ nothing.

(II) If JV (above average progressives)

DV ₁	high
DV ₂	high
DV ₃	decreasing
DV ₃	little after long.

(III) If JV (below average progressives)

DV ₁	high
DV ₂	high
DV ₃	high
DV ₄	slowly

(IV) If JV (least progressives)

probably it is too difficult
(and expensive) to make the Laggards
successful first adopters

Hypothesis (III) therefore shows the highest efficiency.

The sociological implication of the hypothesis is that the higher the progressiveness status of an adopter is above the potential adopted under consideration, the less he can identify himself with the adopter above him and the fewer communication links there are between them. This situation is enforced by less favourable psychological and economic conditions of the farmers on the progressiveness scale downwards. Rigid ethnic, class, "caste" structures, which often go parallel with the progressiveness are a further additional enforcement of the above situation.

But vice versa the situation is different. Potential adopters above actual adopters can establish communication

links with the less or far less progressive easily. Identification is no problem. He may even think that what the adopter below him achieves he himself can achieve better. The psychological and economic conditions as well as privileges of the social structure favour him also.

4.22 Variable system and hypotheses for extension methods: As independent variables we consider the methods to make the target farmers (less progressives slightly below average) successful adopters. Most interesting for us is the combination of the variables (less the variation at present).

The variables are:

- JV₁ Special training for the extension agents.
- JV₂ Crop demonstrations.
- JV₃ Extension training for farmers in the field.
- JV₄ Extension training for farmers in groups.
- JV₅ Extension training for farmers in the Farmers Training Centre.
- JV₆ Input provisions.

The dependent variable is the more or less rapid and successful adoption of the innovation amongst the selected farmers.

Our Hypothesis:

(I) $V_1 + V_3 (V_4 + V_2) + V_6$ more rapid/
successful adoption.

(II) $V_1 + V_5 (V_4 + V_2) + V_6$ more rapid/
successful adoption.

Hypothesis (I) promises a higher efficiency. Hypothesis (II) has been partly tested at Tetu. It was realized that the capacity of the FTCs is too low. Under the importance for replication one has to remember that many Districts in the country do not have their own FTC.

The very new part of the hypothesis, which has to be thoroughly investigated, is the following complex:

$$V_3 (V_4 + V_2).$$

5 RESEARCH METHODOLOGY AND RESEARCH STAGES.

Our research effort aims at more efficient extension strategies and methods for income and employment generating agricultural innovations. We stated that this could be done best by the action research approach. But, since our action research must be incorporated into the governmental extension activities our independent variables can be manipulated only on a very limited scale. Although the decision-making of the respective officials can be influenced by discussions between researchers and officials, the final responsibility for an innovation project stays with the administration. This means that the research methodology has to fit in with the administration's decision on the implementation of new crop projects.

5.1 Testing of hypotheses.

The ideal testing method for our basic hypotheses (see p. 17 (111) and p. 18 (1)) would be the selection of two homogeneous groups of farmers (homogeneous in their progressiveness stage) approaching one with the traditional the other with the new, extension strategies and methods. But even if the administration would agree to such an experimental set-up it is very unlikely that one can keep the traditional variables under control, since one cannot prevent the "traditional" extension agents from communicating and interacting with the "new" extension agents in the same district. To place the control group into another district may create severe problems of homogeneity - not to mention the political problems (proving that one district is more efficient than the other).

A less ideal testing method is the evaluation of earlier crop innovation processes. It seems relatively easy to find out the number of adopters in a given time. Crops with similar relative advantages for farmers would be feasible for comparison.

As a third testing method we consider the judgements of well informed persons in the administration and amongst the local people about the advantage of the new strategies and methods.

5.2 Selection problems.

The selection units for the proposed action research are districts since the extension services are based on the research project in two districts from the very beginning. The major purpose of the research is the development of replicable strategies and methods. If the project is carried out in two units, which are distinguished by different social and economic conditions, the danger of producing not replicable "area based" prototypes is reduced. The selection of districts is under discussion with officials from Kisii and Kwale.

The selection of new crops is important for our research approach because only crops compatible with the farming methods of less progressive smallholders, but also of interest for progressive, are feasible for the testing of our hypotheses. The feasibility of crops for certain categories of farmers is a variable which can be manipulated to some extent. E.g. a not yet feasible capital intensive crop can be made feasible through provision of credits. But for the purpose of a less sophisticated research programme we prefer new crops,

- (a) paying better than others,
- (b) requiring no sophisticated husbandry,
- (c) no high inputs and
- (d) interesting for all adopter categories,

Exploratory research has shown that at present several such crops exist for both districts¹⁾. But ultimately it is with the administration to decide about the crop selection. Another action research based adjustment may be necessary for incorporating the administration's decision.

The selection of farmers is the most crucial procedure for our research. Regarding the recommendations of the Tetu project we assume that a replicable method to determine the progressiveness stage could be reached through an index derived from the number of adoptions of agricultural innovations (specific in a given area) by a person, the time since he had adopted, and his economic status (reflected by his landholding²⁾. This method is very rough but could be replicated without involving large scale research activities.

5.3 Action research stages

- (a) Co-operation with the district administration: it is evident that action research of the proposed kind can be carried out only in full co-operation with the officials. First they have to agree upon the usefulness of the research. The strategy to get the district administration convinced is to communicate the research ideas by informal and formal research activities.
- (b) Preparation of first extension actions: the "translation" of the research design into an applicable practical approach needs detailed preparations through administration and researchers jointly (decision on crop, implementation strategy and methods, training of extension agents). Stages (a) and (b) should be completed before the next planting season (March 1974); simultaneously exploratory research on the major adoption constraints for less progressives.

1) Special papers have been developed by us to communicate the explored information to the respective district officials.

2) The baseline study at Iveri and Kisii did not show a significant correlation between landholding and progressiveness. But it is known that the most progressives usually belong to the people of the economically higher strata.

- (c) Scientific control and evaluation of the first extension actions: according to our proposal a small scale demonstration cum training (of groups in the field) has to be implemented by the administration. On the basis of a careful scientific control and evaluation the decision for further extension actions (full scale) could be made.
- (d) Evaluation of full scale extension activities: A final evaluation may be the foundation for the completion of a replicable efficient extension prototype.
- (e) The replication for other districts: this final stage probably requires certain adaptations, which should be controlled by researchers.

Probably unforeseen problems within the earlier action stages require additional time for problem solving research. Our stages therefore, should be considered as a prospectus only. We consider as main criterion for the quality of our research the problem solving success.

6. BUDGET PROPOSAL

The budget proposal covers one year. (The research proposal is planned for about two years.)

The research is carried out by a team (S. Schoenherr, E.S. Mbugua, and for stage a) at Kisii C. Barnes).

About 50% of the time will be field work.

Per diem	(Kshs. 40/=)	<u>KSHS.</u>
180	S. Schonherr	7,200/=
180	E.S. Mbugua	7,200/=
20	C. Barnes	800/=

Since the project is being carried out at two districts simultaneously the travelling cyclus will be as shown:

I.D.S. - District (Kwale) -- I.D.S. - District (Kisii)
I.D.S. The period spent in one place usually will be one week.

Petrol allowance

(visits 12 l per 100 km, within districts 20 l per 100 km; 1 litre = Kshs. 1,25).

(a) District (Kwale)	12 visits and 12 weeks travelling with the district (each visit 1,100 km and each week 500 km travelling within the district) approximately	3,500/=
(b) District (Kisii)	12 visits and 12 weeks travelling within the district (each visit 1,000 km and each week 500 km travelling within the district) approximately	3,300/=

Research Assistants

(a) For stage c) (evaluation)	3 field assistants for 3 months (a 600/= per month)	5,400/=
	Subsistence	2,700/=
(b) 2 assistnats for coding and data compiling for 6 weeks (a 600/= per month)		1,800/=

<u>Computer Time</u>		
approximately		600/=

Total budget	32,500/=
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