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PROJECT

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PROPOSAL FOR EVALUATION OF THE COMMUNITY SATURATION  
PROGRAM OF AGRICULTURAL EXTENSION IN UGANDA.

Note: Rural Development Research Papers are written as a basis for discussion in the Makerere Economic Research Seminars. They are not publications and are subject to revision.

Introduction

This paper is primarily a description of phase I, of a proposed two phase investigation of community saturation, a new approach to agricultural extension. The proposal is divided into the following sections: I. Two phase study; II. Phase I, Sample Size and Selection Criteria; III. Evaluation Techniques; IV. Survey Techniques.

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The Community Saturation Project (csp.), introduced in Uganda late in 1966, is a Uganda Government - Ug AID response to revealed general weakness and specific observed failures of 'traditional' agricultural extension (ae.) services. The saturation approach seeks to remedy deficiencies of extant ae. in overcoming farmers' reluctance to adopt recommended agricultural practices by improving extension services in five fundamental ways:

1. by increasing the intensity of extension services in selected communities, both through reduction of the ratio of farm families to extension staff time inputs and through an expansion in the number of extension activities (presumably up to the 'saturation' point).
2. by improving extension staff morale and commitment; providing them more relevant training in ae. methods and content; and increasing the proportion of staff time spent in the field, especially for Agricultural Assistants who are the principal agents of csp.
3. by stressing extension advice whose content is both technically sound, on the basis of research findings, and likely to be attractive to farmers.
4. by emphasizing social mobilization for agricultural change: through group activity and identification of local leaders as potential change agents. Establishment and growth of organizations focussed on improved farming practices and an enlarged role for

small-group methods of teaching and persuasion (eg. method demonstrations, result demonstrations, farm tours) are deemed to be important means of overcoming socio-economic inertia.

5. by integrating and making more readily available the many kinds of public and private services to farmers (eg. research findings, subsidized inputs, output market facilities, health services).

After two years of what can be thought of as a pilot phase, operating in one parish in each of sixteen districts, the saturation project is currently expanding to include up to 100 additional esp.'s, ideally one per county over the whole of Uganda. It is useful, at this point of transition and expansion, to undertake a study to evaluate the effectiveness of both the existing and forthcoming esp.'s in achieving their fourfold objectives:<sup>1</sup>

1. Improved farm family wellbeing, especially as evidenced by increased farm output, money income, and consumption.
2. Adoption of superior agricultural practices and techniques of farm management.
3. Reduction or removal of social and other obstructions to progressive farming.
4. Creation of a committed and well trained extension staff who can establish the usefulness and good intentions of esp. services in the minds of farmers.<sup>2</sup>

#### PROPOSAL FOR RESEARCH AND EVALUATION

##### I. TWO PHASE STUDY

The evaluation will be undertaken in two temporally overlapping phases, each defined by the set of esp.'s from which its sample for observation is taken. In Phase I, Mr. Watts and

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1. Paraphrased from H. Dusenberry OUTLINE FOR ESTABLISHING BENCHMARKS FOR SATURATION PROJECT and from LECTURE OUTLINE NO.1: ESP PHILOSOPHY AND OBJECTIVES (from AAO's training course notes).
  2. Goals 2, 3, and 4, are appropriately considered objectives only in the short run; that is, to the extent that they are fulfilled, their effects will appear in the form of enhancement of objective ~~#~~ 1 over time. In a sense, therefore, they are means whose achievement per se is only proximate measure of "success".

Mr. Vail will direct an investigation of four of the original sixteen saturation communities; in Phase II, Mr. Wandera and others will study a larger sample of projects from the 100 initiated in February, 1969.

The phase approach to evaluation, in particular the justification of the first phase, is based on the following premises and constraints: 1. Working within the proposed timetable (see below, page 12), we should be able quickly to provide information, based on the experience of the initial sixteen projects, which may be incorporated in the operation of the expanded saturation program. 2. The development of survey, correlation, and evaluation techniques through intensive study of a small number of projects in Phase I will significantly improve the efficiency of information retrieval and interpretation in Phase II. This is of the greatest importance if we hope to observe a fairly large proportion of the new csp.'s within reasonable budget and researchers' time limitations. 3. Both Mr. Watts and Mr. Vail are working under contracts which expire in mid-1970. Consequently, they will not be available for the kind of on-going research which is envisioned for Phase II. Mr. Wandera, who, it is proposed, will oversee the second phase, will be available to conduct a baseline study among new saturation projects in the next few months; he will not be able to direct a thorough evaluation study until 1971. Thus, launching immediately into a full-scale study of the newer projects is not feasible in view of limitations imposed by time commitments of available researchers. However, given that it will be some time before the effects of the newer projects are felt, the timing of Phase II field work - an initial baseline survey and lagged subsequent investigation - is appropriate to the practical realities of the scheme itself.

## II. PHASE I SAMPLE SIZE AND SELECTION CRITERIA

The number of projects which can be studied effectively in either phase depends upon: the finance available; the desired degree of intensity and thoroughness of the study; and the strength of the inverse relationship between sample size and logistical manageability. On the basis of these limiting factors, we concur that four projects is the maximum which can be handled effectively in Phase I. Specific reasons for this decision are: 1. that, given the anticipated size of our budget, to attempt a study of more than four projects would require a reduction in

in the intensity of surveying<sup>1</sup>, and thus a decline in both the extensiveness and the quality of data collected. We would also be constrained to select projects on a geographical basis (clustered near Kampala) which is undesirable. (nb. the number of projects studied; their locations visavis Kampala and each other; and the intensity of surveying are seen to be the major strategic variables affecting the cost of the study). 2. Considering the teaching and other obligations of Mr. Watts and Mr. Vail, expansion of the sample beyond four would leave insufficient time for assisting enumerator supervision and conducting surveys of extension staff. 3. As previously discussed (9.1.1969), the evaluation study will form the empirical basis of Mr. Vail's doctoral dissertation; consequently, weekly surveys of a small cross-section sample of farms in each csp. are needed to provide input/output data for a benefit-cost type analysis of the farm production effects of the saturation projects. (It is anticipated that this dimension of the project will be a major contribution to the evaluation as a whole). Such intensive surveying would seem incompatible with study of a larger number of csp.'s (see Appendix II, financial projection, below).

In phase I. we propose to study the csp.'s at Mawokota County (West Mengo), Kyagwe County (East Mengo), Pallisa County (Bukedi) and Bukedea County (Teso). It is obvious, considering the great diversity of the sixteen projects in terms of ecology, prominent features of the social system, the quality of extension personnel, access to markets, and other diacritic factors, that it is impossible to encompass the important differences among projects and to achieve a high degree of comparability at the same time. We have opted for two pairs of projects with considerable internal similarity but substantial divergence between pairs. These projects meet the criterion of manageability through intra-pair proximity, relative nearness to Kampala, and accessibility from tarmac roads.

The Buganda projects are interesting because they represent the enaction of ae. services in the prominent coffee-banana zone at a time when international market conditions are forcing a search for new modes of agricultural intensification acceptable to the bulk of farmers. The evolving Kiganda culture and social

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1. By 'intensity of surveying' we mean the combination of size of farmer sample observed, 'completeness' of questionnaires, and frequency of observation/surveying.

structure form a basis of relative internal continuity, useful for comparison of the differential experience of these two projects and for contrast to the socio-cultural milieu in which ae. works in the Iteso populated Bukedi and Teso projects. The Bukedi-Teso projects, we expect, will present interesting contrasts to Buganda arising from cultural, farming potential, marketing-transport and other differences.

We cannot expect the experience of any sample of four projects adequately to represent the totality of the csp program; nonetheless, the communities chosen for investigation present interesting possibilities for contrast, comparison, and possibly some generalization.

### III. PHASE EVALUATION TECHNIQUE

Since our primary task is to determine csp.'s effectiveness in using scarce human and material resources to achieve its mix of objectives, we must develop analytical and data collection techniques which will enable us to: 1. measure saturation project inputs - ie. to estimate the social cost of resources allocated to the program as a whole and to the four project communities under examination. 2. To identify the effects or "outputs" of csp., that is, to ascertain what changes in saturation communities are solely or partially attributable to the project and which must be credited to other causes. 3. Insofar as it is possible, to quantify the extent to which csp. has achieved its stated objectives. 4. To cast light on the causal relationships between aspects of extension activities and saturation community responses; ie. to distinguish not only what the results of csp. have been, but also why, in terms of specific features of its operation, it has been more or less successful.

Three basic techniques of analysis seem appropriate to this kind of project and to the kinds of information which we will be able to generate:

A. Qualitative evaluation of the internal structure and functioning of the saturation extension service by means of comparison to extension practices elsewhere in Uganda and in other developing countries (as explained in Mr. Watts' attached paper).

B. Benefit-cost analysis is a relatively high-powered means of measuring the efficiency of resource use to maximize a goal-set. As a tool of project evaluation, it is most useful when both

inputs and outputs are easily quantified and commensurable. Considering that much of our data will be qualitative in nature and that many of the desired short run effects (benefits) of csp. involve changes in the subjective predispositions of farmers, benefit-cost analysis cannot profitably be used to derive an overall measure of saturation project success. Nonetheless it can be used profitably to measure the net direct economic benefits (to the farmer and to 'society') attributable to changes in farm resource allocation and expanded managerial capacity induced by ae. activities. As an important by-product of benefit-costing, we will derive quantitative estimates of yield, income, and labour productivity changes. B-c. techniques are typically used to determine the rate of return to a stream of inputs over time; since we cannot adequately project backward to the beginning of csp. in 1967, and since the duration of the Phase I empirical observation will be little more than one year, the value of our calculations will be diminished by the shortness of the time series. Even so, collection of input-output data will be the basis of our most definitive test of the direct economic payoff to csp.. The results of our experiment with this analytical technique will undergird the longer time horizon study of Phase II.

C. Benefit-cost analysis cannot easily incorporate qualitative changes or tell us why certain farmers in a community do and others do not adopt specific recommended agricultural practices after exposure to a particular combination of ae. activities. To achieve an understanding of the nexus of causal links between ae. and farmers' responses we need different kinds of information and different ways of analysing it. Questionnaire surveys of both csp. personnel and a sample of farmers - say fifty per community - can provide a wealth of information when judiciously analysed by means of statistical correlation techniques. We hope to establish, on the basis of broad deductive hypotheses, probable causal links between variables from the frequency distributions of their statistical relationships. (to give a simple and often cited example: we can use statistical inference to show that, in a community where children's primary education is revealed by the survey to be important for parents' community and self-respect, the farmers accepting advice to plant cotton early, weed carefully, spray, and harvest fully - at the expense of considerable increase in labor inputs - may tend strongly to be those with many children of or approaching primary school age). The concept of establishing probable cause by correlation is by no means new to the study of farm innovation, but the techniques typically used (rank correlations,



scatter diagrams, are so low powered as to render inferences extremely weak. It should be possible to strengthen our conclusions by using single equation, or preferably simultaneous equation models and multivariate regression analysis to point out underlying relationships among the household, community commercial and agricultural extension systems.

Since one of the stated objectives of csp. is to remove "social pressures" to adoption of recommended farming practices, we anticipate the association of two or more sociology students who would concentrate their study specifically on the social dimension of csp.

#### IV. PHASE I, SURVEY TECHNIQUES

We intend to glean information from all available sources, including <sup>for</sup> example, Government publications on recommended farming practices; the Department of Agriculture compendium on farming in Bukedi; and DAO's county and gombolola data on crop acreages and yields. However, we will rely for the bulk of our data on a three tier questionnaire survey.

By questioning ac. staff, and particularly the AA's in charge of the four csp.'s chosen for study, we hope to get:

1. measures of saturation project inputs;
2. a taxonomy of the practices recommended and activities undertaken in each year for the saturation community;
3. information on staff qualifications, experience and commitment;
4. their own sense of their rapport with the people of the project;
5. we are especially interested to learn from the csp. staff what they believe to be their successes and failures, what they feel to be the explanation of their success, and what attempts they have made to remedy revealed weaknesses in their programs;
6. we hope to determine the extent to which staff have begun to use well-received csp. methods outside the saturation community.

By means of a large sample survey, fifty to sixty households per community, taken at long intervals of six or twelve months, we hope to gather an inventory of data on the effects of csp.:

1. to identify and note the characteristics of 'progressives', 'followers', and 'laggards' among local farmers;
2. to catalogue the farm practices recommended by extension staff and the extent of their adoption subsequent to promotion by various ac. methods;
3. to find out whether and why residents feel that saturation project has helped them to improve their lives; and
4. whether it

has affected their bias for or against future innovations in farming techniques, etc. This survey will provide the bulk of our data for correlation-type testing and for generalizations about the subjective, qualitative effect of csp. on the community.

1. For each csp. we will carry out an identical survey in a 'control community', chosen to resemble the saturation community in all respects save the existence of the saturation project. Data from a community adjacent to the csp. will be useful for the following purposes: 1. to test the ex ante "degree of differentness" of the csp. community from its neighbours and to provide a standard against which to measure the progress of the saturation community. 2. To determine what ae. and other related public services are available to other communities in the area, providing a measure of the degree to which csp. actually 'saturates', relative to normal extension coverage. 3. To learn, at least qualitatively, the significance of csp.'s catalytic effects on the surrounding area through communication of ideas among farmers of neighboring communities; through demonstration effects in consumption and production; and through application by extension staff of successful methods used in the csp.

C. By means of frequent recording of farm input and output data, from a small sample of fifteen households per csp, we hope to construct a quantitative notion of the pecuniary costs and benefits of the saturation project. We will select the sample to approximate a cross-section of the whole community, enabling projection from the small number of households to estimates for the whole csp. This obviously requires a judicious selection of households from the larger inventory sample (whose data should be sufficient basis for selection according to not yet established criteria).

There are several alternative means of conducting the intensive survey. After considerable consultation with researchers experienced in such procedures, the optimum strategy - in terms of frequency of observation, quality of data, and size of sample, appears to be to employ an enumerator for each csp. who will pay weekly visits to each of 15 selected households. He will collect data from farmers' notebooks on their daily labor and material inputs for each operation (soil preparation, planting, etc) on each farm plot. This will obviously require farmers who are cooperative and someone in each household who is literate, at least in the local language. We will provide each farmer with pen and notebook, a 200 pound scale for weighing outputs, and a map of

his farm with numbered plots. It is possible, though debatable, that a small monetary reward (eg. one shilling per visit) might stimulate cooperation on what may be a tedious chore for the farmer.

In sum, we will be engaged in six kinds of questionnaire surveying over the next fourteen months. For phase I we envision: surveys of saturation project extension staff; surveys of other extension staff and Department of Agriculture personnel; two inventory surveys of a fifty household sample from each csp.; two control community inventory surveys; and high frequency surveying of a fifteen household sample from each csp. as a source of input-output data. For Phase II our immediate plans call for a baseline survey, similar to the Phase I inventory survey, in an as yet undetermined number of new csp's.

#### APPENDIX I.

##### RESEARCH PROJECT PERSONNEL

###### A. Senior Researchers:

- E.R. Watts                      agricultural extension and education specialist Makerere Department of Rural Economy.
- D.J. Vail:                      economist; Makerere Institute of Social Research.
- A.B. Wandera:                  agronomist and extension specialist; Makerere Department of Rural Economy.

###### B. Phase I Research Assistants

- Enumeration Supervisor: Mr. Basoga
- four Makerere economics/ agriculture students: enumerators and data tabulators.
- eight secondary school certificate holders from project locales: enumerators.
- two to four sociology department students (tentatively)

###### C. Research Advisors:

- B. Brock:                      rural sociologist (department of rural economy)
- D. Belshaw:                    Agricultural economist (dept. of rural economy).

- J. Hutton: economist (MISR).
- R. Nelson: Agricultural Economist (dept of Rural economy and US AID).

APPENDIX II.

PHASE I, FINANCIAL PROJECTION (March 1969 to May 1970)

A. ESTIMATED MANPOWER COSTS

1. Basic Data

- a) Makerere student wage: shs.20/day or about shs.500/month
- b) secondary school leaver-enumerators basic pay: 250 shs/month plus government rate for accumulated leave of three days (shs.30 per month)
- c) enumerator supervisor: shs.350/month plus accumulated leave of shs.40/month

2. First Inventory Survey

- a) 4 Makerere students x 500 shs/mo x 2 months = shs. 4000
  - b) 4 enumerators x 280 shs/mo x 2 months = 2240
  - c) 4 enumerators x 280 shs/mo x 1.5 months = 1680
- 7920

3. Intensive Small-sample Survey

- a) Supervisor @ 390 shs/mo x 14 months = shs. 5460
  - b) 4 enumerators @ 280 shs/mo x 12 months = 13440
- 18900

4. Second Inventory

- a) 4 enumerators @ 280 shs/mo x months = shs. 2240
- 2240

5. Data analysis assistance

- a) approx. 8 Makerere student man-months = shs. 4000
- 4000

total estimated costs shs.33060

B. MATERIAL AND OTHER COSTS

1. Supervisor's transportation

- a) one motorcycle (hopefully available to lease from FAO Census Stock)
- b) mileage: @ .30 per mile x 700 miles round trip from K'la. to all four projects x estimated 20 trips = Shs. 4200
- c) life insurance policy on supervisor

- 2. Other transportation
  - a) enumerator bicycles: should be available free of charge from UNESCO
  - b) motorized vehicles: available on M.I.S.R. vote.
3. Intensive survey materials
  - a) one pen, one notebook, one 200 pound scale for each participating family: 60 families @ shs.15/family  
= shs. 900
  - b) tentative one shilling per visit emolument: 60 families  
x 52 visits = shs. 3120
4. Initial four day training course for enumerators at Kabanyolo, plus transport
5. Stationery and secretarial services
6. Computer and computer programmer time

C. SOURCES OF FUNDS

1. US AID shs.24,000 per annum.
2. Rockefeller Foundation/ MISR: funds available for Makerere student employment, MISR-owned vehicle hire, and possibly computer time. Underwriting Mr. Vail's travel expenses.
3. UNESCO: funds available for student employment and Mr. Watts expenses.

APPENDIX III.

TENTATIVE PHASE I, TIMETABLE<sup>1</sup>

1969

- March: Visit selected esp's and relevant ac. staff
- a. select control communities for inventory survey
  - b. get farmer sample from gombolola tax roles
  - c. get 1967 and 1968 histories of farming practices recommended (for use in questionnaire)
- Recruit enumerators  
Finish Questionnaires  
Train enumerators at Kabanyolo (including field tests of questionnaires)  
Initiate inventory survey

ig  
April: Carry out inventory survey  
Select small sample of households from inventory survey for intensive survey; map farm plots of selected samples after getting acquiescence; purchase and distribute pens, notebooks, scales.  
Select and train enumerators for intensive survey  
May: Begin intensive survey (to be continued for one year at weekly intervals)  
Begin tabulating inventory survey data  
Begin extension staff interviews  
July-August: Present preliminary findings from first inventory survey

1970

March: Begin second inventory survey  
April: Finish second inventory survey  
Terminate intensive survey  
May: Formal presentation of findings

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