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BASIC VILLAGE EDUCATION - GUATEMALA
EVALUATION COMPONENT
SECOND INTERIM REPORT
SEPTEMBER 1975 with AMENDMENT

BASIC VILLAGE EDUCATION*

GUATEMALA

EVALUATION COMPONENT

SECOND INTERIM REPORT

SEPTEMBER 197[illegible]

with

AMENDMENT

*The Basic Village Education Project is jointly funded by the Government of Guatemala and the United States Agency for International Development in accordance with terms of an agreement between the two governments. It is administered in Guatemala by the Guatemalan Ministry of Education in collaboration with the Ministries of Agriculture and Health. Foreign personnel and other technical assistance is provided by the Academy for Educational Development supported under contract No. AID/CM/la-C-73-19 with the United States Agency for International Development. Responsibility for an independent evaluation of the Project rests with the University of South Florida through a sub-contract with the Academy for Educational Development.

UNIVERSITY OF SOUTH FLORIDA

TAMPA, FLORIDA

REPORT AMENDMENT

Final confirmation of the loss of a full experimental year in the highlands coincided with the preparation of this report and the Washington review.

The present status is as follows:

1. Conferences have been initiated in Guatemala by Rich and Nesman with Howard Ray concerning option.
2. Evaluation recommendations have been made to AED, AID, and BVE.
3. Follow-up conferences are to be scheduled for September with AED and AID.

The following memorandum of July 25, 1975 outlines the general situation. Final action of all concerned will determine the direction of both the Occidente experiment and cross-cultural comparisons.

MEMORANDUM **July 25, 1975**

TO: AED/AID/BVE

FROM: Rich and Nesman, Evaluation Unit

SUBJECT: Loss of Experimental Year in the Occidente: Recommendations for Continuation of Experimental Design

Within the tight time frame of the BVE experimental design, the loss of an experimental year in the Occidente has far reaching consequences. As presently projected the experimental time frame would only leave one year for the measurement of change in the Occidente with no control. Further, if this time frame were continued no data would be available for cross-cultural comparison, perhaps the most important single aspect of the total study.

After careful consideration of the original contractual agreement on research design and with the need to preserve the experimental data, several options are evident. We recommend option #1. Options #2 and #3 are listed to show the consequences of the loss and may be programmatically feasible but are not consistent with the original research purpose of the project.

Option #1 - This option is recommended to preserve the full integrity of the experimental nature of the project. We recommend that the radio programming and evaluation components be extended for one additional year in the Occidente with the final report of findings and cross cultural comparison then being due on June 30, 1978. The Oriente schedule is anticipated to be on time and the final report for that due as scheduled, June 30, 1977. The extension of the project in the Highlands for one full year would allow for two years for the study of change, one complete year of control data during an experimental year and two years of monitor control data.

Following this schedule would allow a direct time sequence comparison of the findings in Yupi in addition to comparison of the first two years of experience in Quezada.

In addition the following should be considered:

1. Radio programming with Agricultural content that takes place before a second Occidente baseline study can be conducted this fall would contaminate an experimental free control year and also potentially contaminate the first experimental year in the Occidente. Since the radio apparently must begin to operate, the best solution would be to take a shortened version of the questionnaire and do the year-end study immediately in the Occidente before radio contamination occurs.

2. To justify investment of an additional year, written agreement by the NFE program to delay programming in the Experimental and Control areas in the Occidente until a completion of this study would be critical.

3. From a budget and personnel view, one additional year of budgeting for evaluation activities in addition to program budgeting would be required in the Occidente.

We feel that this option allows the preservation of the research design with the necessary integrity to produce the answers concerning cost benefits and differential effectiveness of the treatments, necessary for future programming. Failure to follow this recommendation will mean not only the loss of the Highlands experiment but the loss of the cross cultural experiment, this being approximately 2/3 of the total experimental data and all at this point based on one critical additional year of evaluation.

Option #2 - Option #2 is not recommended but does appear as one possibility. In this option, perhaps called Evaluation Salvage, the radio programming and evaluation in the Highlands would end on schedule with full acceptance that no experimental design is being carried out and that as mentioned above 2/3 of the design will be lost. Some useful evaluation baseline data would be available and some soft data on one year change would also be available. No meaningful comparison could be made with the impact in the Oriente. The one year programming would not allow for valid or reliable measurement of change in knowledge or attitude and practice.

In this option it would be clearly understood that the evaluation unit would evaluate the data available and report it back but would no longer be seen as responsible for an experimental design in the Occidente or for cross cultural comparisons. Budget costs would remain the same as originally planned for evaluation although possibly some of the final reports would be deleted because of the lack of comparability of data.

Option #3 - The next level of options would be to drop the evaluation activities in the Occidente and continue the programming for professional and technical experience of the field staff. The advantage of this would be that it would reduce somewhat the cost associated with the project in terms of evaluation in the Occidente including field studies, time sampling and data processing. The evaluation unit would concentrate on the complete analysis and write up of the Oriente data and submit that report as due on June 30, 1977.

The disadvantages are:

1. No cross cultural data;

2. No Occidente data as base for future programs;

3. Some difficulty in justifying total cost of a project that produces about 1/3 of its major goal;

4. Decreased credibility of the participating organizations from the inability to complete the project might have some other nonevaluation implications for future programming.

Summary

The BVE experimental design developed in 1973 provided for three major intergraded components. They are as follows:

1. Impact of the project in a Ladino area (Oriente);

2. Impact of the project in an Indian area (Occidente);

3. A cross cultural comparison of differences between Ladino and Indian cultures in the total process of evaluation, from initial baseline studies to impact of the designated treatments.

Without the extension recommended in Option #1, components 2 and 3 are lost and the only area with a substantial data base for future programs is in the Ladino area of eastern Guatemala.

TR/mr

August 1, 1975

The above memorandum was used as a basis of discussion with Ray and USAID/Guatemala personnel. Also included in the discussions were possible changes in US technical assistance input, long turn measurement of change, as well as budget and political implications of programming options. From an evaluation point of view:

1. All input variables, such as technical assistance, should remain as constant across time and cultural areas as possible.

2. Any possibility of measuring the results of change over a longer period of time would be worthy of consideration in light of the nature of the time required for the adoption of new agricultural practices among subsistence farmers.

EGN/js

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PREFACE

A. Background and Program Requirements

There has been no fundamental change in program requirements from those stated in the report on the first year's operation.* Selected excerpts from this report are included here:

"Interest in development and modernization has been stimulated by recognition of rapid population increases, food shortages, and the mounting evidence of the crippling effects of severe nutritional deficiencies on human growth and potential. The traditional subsistence economy, with population pressures and concomitant low yield farm practices has become the special target of development programs through formal and nonformal education, agricultural improvement practices, and health and nutrition improvement practices."

"Despite attempts to improve formal rural education and to develop adult literacy programs, the subsistence level peasant population remains largely illiterate and slow to chnage. Nonformal education, through mass media, such as radio, appears to be a major communication channel for reaching enough people in a time period that will make an overall impact."

"Guatemala's national development plan encompasses many programs to help rural families improve their education, agriculture, living conditions, and communities. Using traditional extension methods, the number of families reached by such programs is limited. A much larger proportion of the rural population can be served, however, if the efforts of agents, promoters, teachers, etc., can be reinforced through use of modern communications techniques."

"The Academy for Education Development (1973) concluded that an experimental project in Basic Village Education is feasible in Guatemala and stressed the importance of the following factors:

1) The need for rural development in Guatemala.
2) The potential benefits of the project to rural development.
3) The availability of resources to develop materials and information for such educational programs.
4) The capacity and willingness of Guatemalan agencies in health, agriculture and education to cooperate and to provide adequate administration of the project."

B. Program Description

The Basic Village Education Project (BVE) is an experimental program of nonformal adult education which does not initially require literacy. It seeks to determine the effectiveness and relative costs of selected combinations of communications media that have potential for use in development programs where resources are limited.

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*Although there have been no changes in the rationale of the program, delays in initiation of some aspects such as the opening of the Occidente radio station have required serious readjustments in the evaluation time-table and may eliminate fundamental parts of the original plan for the project (see: Amendment).

The target population in Guatemala is the rural, peasant subsistence farmer, characteristic of the traditional rural societies that are still found throughout the world. Arensberg and Niehoff (1971) describe the attributes of the rural peasant and their description is most applicable to that of the current population under study. These attributes are as follows, paraphrasing generally from the reference:

1) Use subsistence form of agriculture.
2) Live in a cluster of houses, from a few hundred to a few thousand people.
3) Have greater self-sufficiency than farmers in industrial states but dependent on cities for special goods.
4) Sell some surplus production for cash.
5) Are ambivalent towards the city in that they need goods but have fear of exploitation.
6) Are bound by traditional values and custom.
7) Are on the average, illiterate.
8) Have low levels of educational attainment.
9) Follow regional patterns of diet, home use of remedies, and use of local practitioners.
10) Are not productive farmers in terms of the national economy.

Thus, the primary audience for BVE is the small, often illiterate subsistence farmer. Program content stresses information that will help that farmer to improve his production and income from basic grain crops. When the program is operational, the Project will include matched experimental and control areas in eastern Guatemala (Oriente) and in the Quiché-speaking Indian Highlands of western Guatemala (Occidente)

C. Evaluation Plan

The original plan for the Basic Village Education Program also included some specific evaluation requirements. They were stated as follows:

The evaluation plan deals specifically with:

1) Evaluation of the differential effectiveness of a series of communication treatments in producing change in attitude, knowledge, practice and production.
2) Measurement of such changes in two highly different cultural settings (Oriente-Ladino, Occidente-Indian).*
3) A related cost benefit analysis following the experimental aspects of development.

Measurement of change is based primarily upon degrees of significance of differences between various treatment and control areas in changes in knowledge, attitudes, practices and production. Given the measurement of differences, together with crop yields and program cost elements, cost effectiveness will be determined and extrapolated for a larger population by an agricultural economist.

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*Due to the delay in initiation of the program in Occidente during the 1975 agricultural year, this comparative measurement will not be possible under the present time schedule (see report amendment for suggested alternatives).

Formal analysis, evaluation and reporting can encompass only the above. Some important side benefits should also accrue, however, in terms of additional inferences that may be made, and later researched by others. These include, for example:

1) A time sample feed-back system throughout the experiment will provide much information concerning effectiveness of specific modes of message presentation within each of the treatments. Such information, used to guide preparation of message materials for BVE, should also be of value to communicators in other rural education programs.
2) Where changes in knowledge and attitudes are not accompanied by changes in practices or production, there will be opportunity to gain insights into other obstacles that inhibit or prevent change.
3) Although no conclusions will be possible concerning forms of organization that can best provide needed agricultural infrastructure, nor the quantitative effects of adequate vs. inadequate service availability, nevertheless some inferences on the influence of such service availability on rapidity of change may be possible.
4) If treatment application does result in differential rates of change, conditions will be created that will permit study (not by BVE) of the social and economic consequences of such change.

Many of the goals of the Basic Village Education program are well on the way of being realized at this time when the second interim report is being prepared. The products of the evaluation component are outlined in the following section. Also included in this report are the activities (process) that the evaluation staff have been engaged in during the past year as the data has been gathered, processed, analyzed and reported. A list of personnel and their responsibilities is found in Section III; Section IV is dedicated to plans and prospects for the next 12 months for the evaluation unit; finally, a number of materials are included in the appendix that will add further detail to the items summarized throughout the report.

Some changes can be noted in the findings but they are more in the area of knowledge and attitude changes. The changes in practice are not as evident nor are they all in a positive direction. These findings are consistent with the literature on the subject which reports that little change in practice can be expected in the short time span of one year.

I. PRODUCTS

There are a number of products expected as a result of the efforts of those engaged in the formal evaluations of the Basic Village Education program. The most immediate product is a measurement of overall change that can be attributed to the educational programs produced for use in the selected areas of Guatemala. A summary of the results of the first year of operation are included in this section. Also included is a description of the large number of reports that have been prepared by the evaluation staff during the life of the project. These reports give further detail to the summary of findings as well as an explanation of the many aspects of gathering, processing, and analyzing the data. A selected sample of these reports have been included in the appendix.

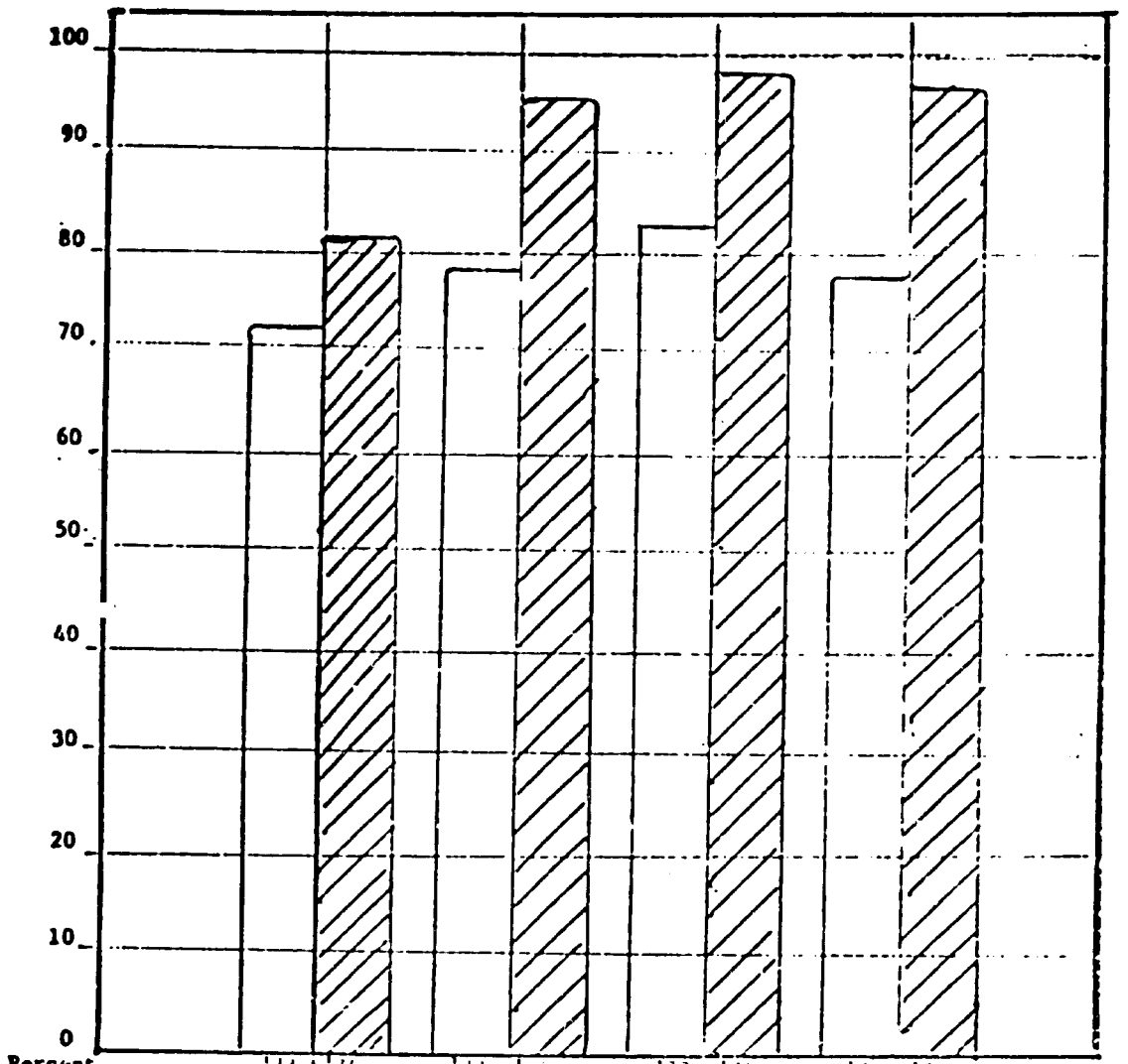
A. Representative Findings: First year of BVE Experimental Program.

1. There has been an increase in radio listenership (see Figure 1).
2. There has been an increase in reported knowledge of recommended agricultural practices (see Figure 2).
3. There has been a greater increase in new knowledge of recommended agricultural practices in the Radio treatment sub-area than in the control area. This increase is even greater in the Radio/Monitor treatment sub-area than in the Radio area and it is greater yet in the Radio/Monitor/Agronomist treatment sub area than in the Radio/Monitor area (see Figure 2).
4. There has been an increase in favorable attitudes toward recommended agricultural practices (see Figure 3).
5. There has been a greater increase in favorable attitude toward recommended agricultural practices in the Radio treatment sub-area than in the control area. This increase is even greater in the Radio/Monitor treatment sub-area than in the radio area and greater yet in the Radio/Monitor/Agronomist treatment sub-area than in the Radio/Monitor area (see Figure 3).
6. There has been no consistent increase in the use of recommended practices. (Note: field reports indicate adverse growing conditions as well as scarcity of fertilizers and other products during the period measured.) (See Figure 4.)
7. The increase in knowledge of recommended practices has been higher than the increase in favorable attitudes (see Figure 5).
8. The increase in favorable attitudes has been higher than the increase in the actual use of recommended practices (see Figure 5).
9. The use of insecticides has increased more in the Radio/Monitor treatment sub-area than in the other areas (see Figure 6).
10. The proportion of farmers using fertilizer has increased in all of the experimental treatment sub-areas in contrast to a decrease in the control area. (Note: the evidence seems to confirm that more farmers are using fertilizer but in smaller quantities due to the shortage.) (See Figure 7.)
11. Crop yields in 1974 were lower than in 1973 in all treatment sub-areas as well as in the control area. (Note: field reports indicate adverse growing conditions as well as scarcity of fertilizers and other products during 1974 growing season.) (See Figures 8, 9, 10.)

The 1974 Baseline Surveys conducted in the new areas selected for the amplified experimental BVE program show many similar characteristics as those found in the Quezada area in 1973. There are also a number of contrasts in such things as crop yields and educational levels. The five major areas are compared in Table I as to 24 items. Further comparison of sub-areas is found in Appendix IV.

. Figure 1

RADIO LISTENING: PERCENT THAT LISTEN DAILY



	Control	Radio	Radio + Monitor	Radio + Monitor + Agronomist
1973 (Q.83)	71.3	77.2	83.0	78.3
1974 (Q.210)	80.7	94.6	97.2	96.6

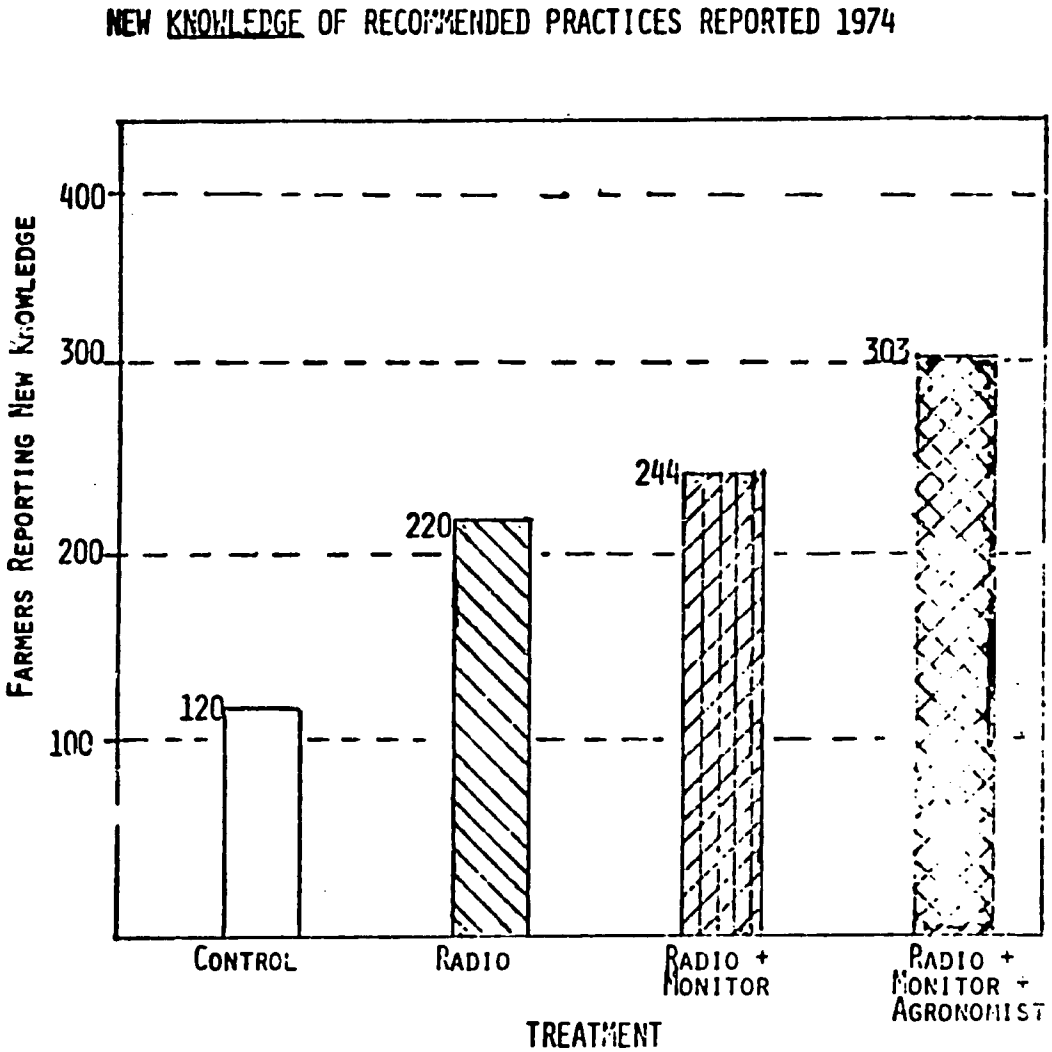
1. There has been an increase in radio listenership. Radio listenership has increased in all of the treatment sub-areas between 1973 and 1974. The change by treatment sub-area was as follows:

RMA = 18.3% (96.6% - 78.3% = 18.3%), R = 17.4%, RM = 14.2%, Control = 9.4%

The increase in the control sub-area would indicate a general increase in radio listenership for the whole area. The effect of the BVE program can be observed in the greater change reported in the sub-areas reached by Radio Quezada.

For further details see Appendix I.

Figure 2



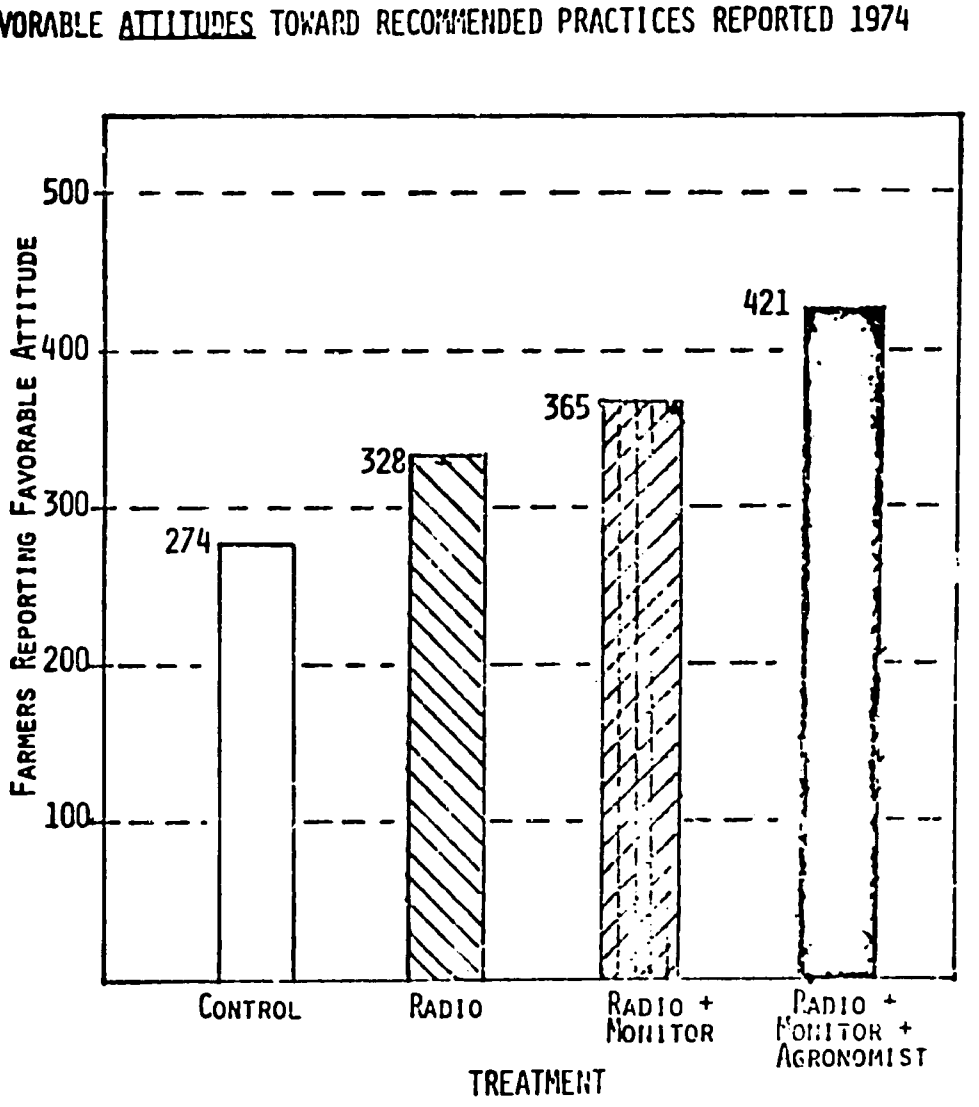
2. There has been an increase in reported knowledge of recommended agricultural practices.

3. There has been a greater increase in new knowledge of recommended agricultural practices in the Radio treatment sub-area than in the control area. This increase is even greater in the Radio/Monitor treatment sub-area than in the Radio area and it is greater yet in the Radio/Monitor/Agronomist treatment sub-area than in the Radio/Monitor area.

Figure 2 is a graphic representation of responses of the farmers when asked if they had heard any new information regarding specific recommended practices. There were 36 practices and 25 farmers in each sub-area were asked about each one giving a total of 900 possible responses per sub-area. The lowest proportion of responses came from the Control sub-area with 120; the highest from RMA with 303. The progression from Control through R, RM, and RMA would seem to indicate that the amount of new knowledge increased as the number of combined communication treatments increased.

For further details see Appendix II and Appendix III.

Figure 3



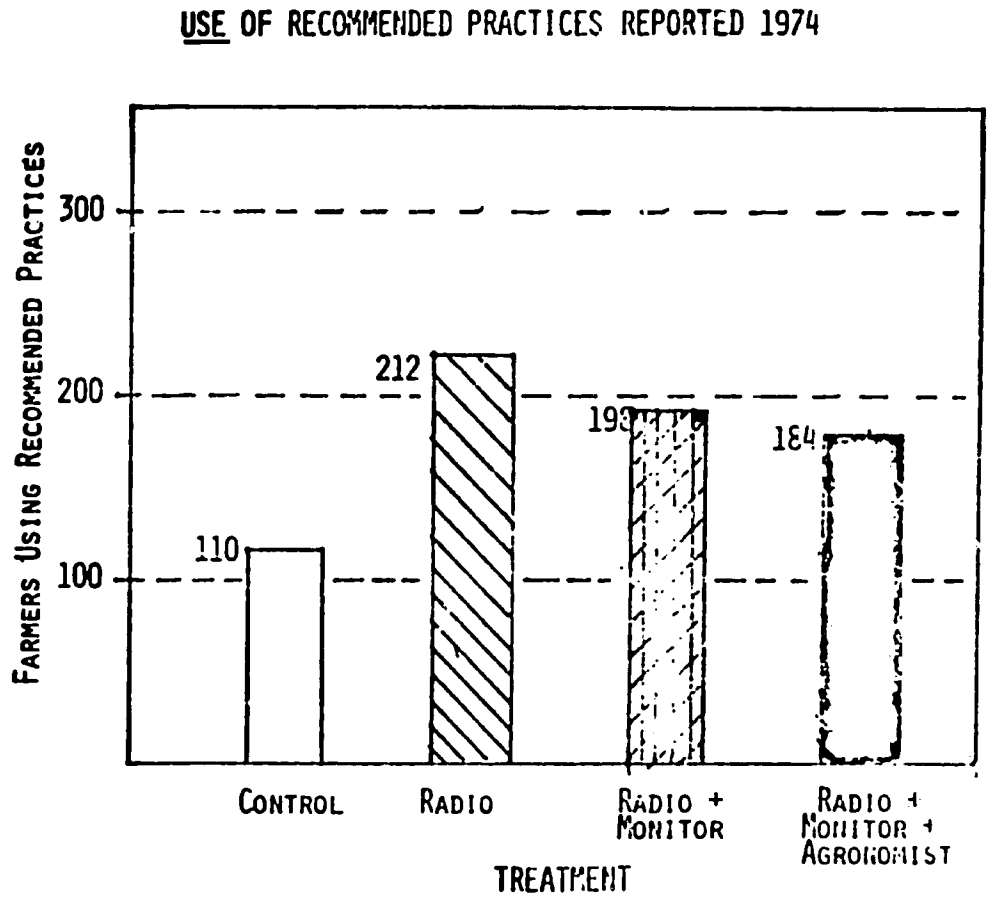
4. There has been an increase in favorable attitudes toward recommended agricultural practices.

5. There has been a greater increase in favorable attitude toward recommended agricultural practices in the Radio treatment sub-area than in the Control area. This increase is even greater in the Radio/Monitor treatment sub-area than in the radio area and greater yet in the Radio/Monitor/Agronomist treatment sub-area than in the Radio/Monitor area.

Figure 3 is a graphic representation of the responses of the farmers when asked how they felt about a specific recommended practice. There were 900 possible favorable responses in each of the sub-areas. The control sub-area had the lowest number (274) of favorable responses; RMA the highest. The progression from Control to R, to RM and to RMA would seem to indicate an increase in favorable response as the combination of communication treatments is increased.

For further details see Appendix II and Appendix III.

Figure 4



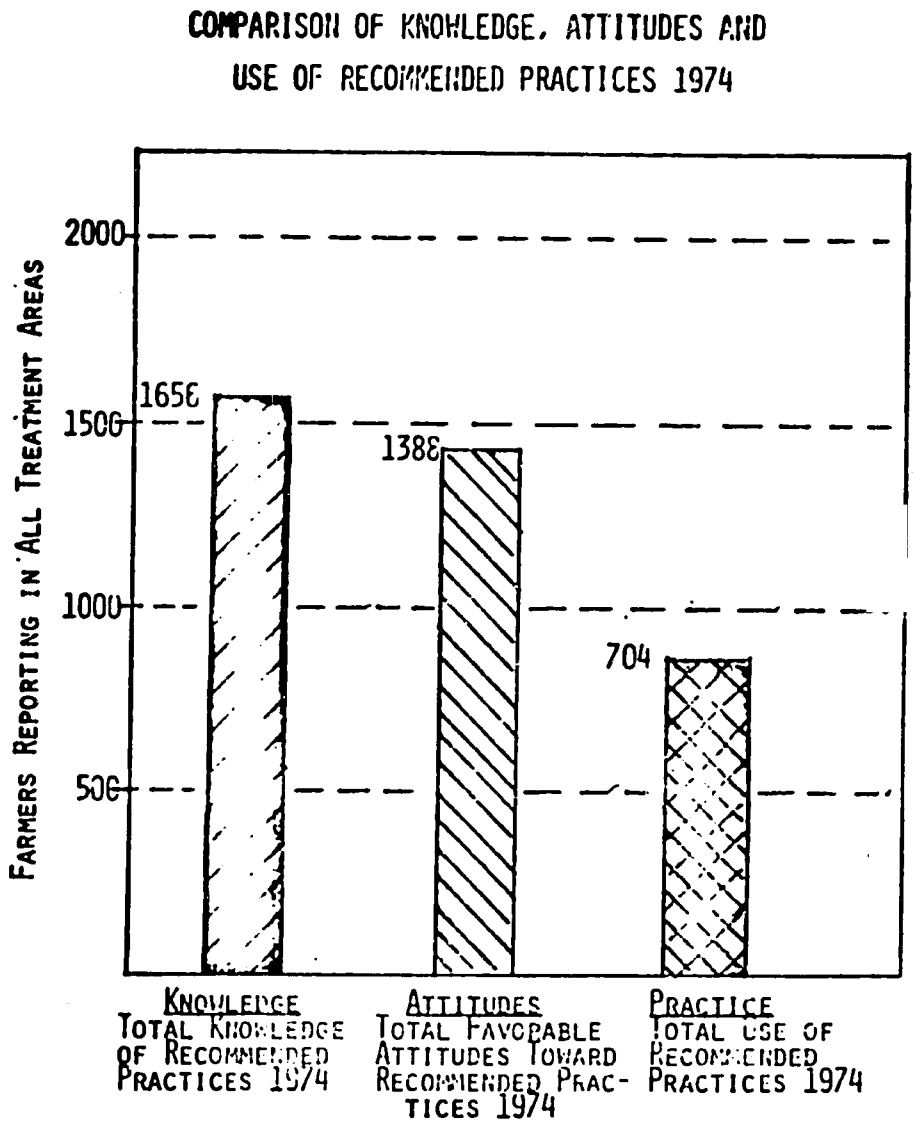
6. There has been no consistent increase in the use of recommended practices. (Note: field reports indicate adverse growing conditions as well as scarcity of fertilizers and other products during the period measured.)

Figure 4 is a graphic representation of the responses of the farmers when asked if they used a specific recommended practice. There were 900 possible favorable responses in each of the sub-areas. The control sub-area had the lowest number (110); R the highest.

All of the experimental sub-areas (R, RM, RMA) show a higher response than the Control area, but the responses in the treatment areas do not follow the same pattern as those of knowledge and attitude. The R sub-area had a much higher level of use of recommended practices at the initiation of the project. Practices change slowly and it would be highly unlikely that the adoption of new practices in the short span of one year would offset the prior level.

For further details see Appendix II and Appendix III.

Figure 5



7. The increase in knowledge of recommended practices has been higher than the increase in favorable attitudes.

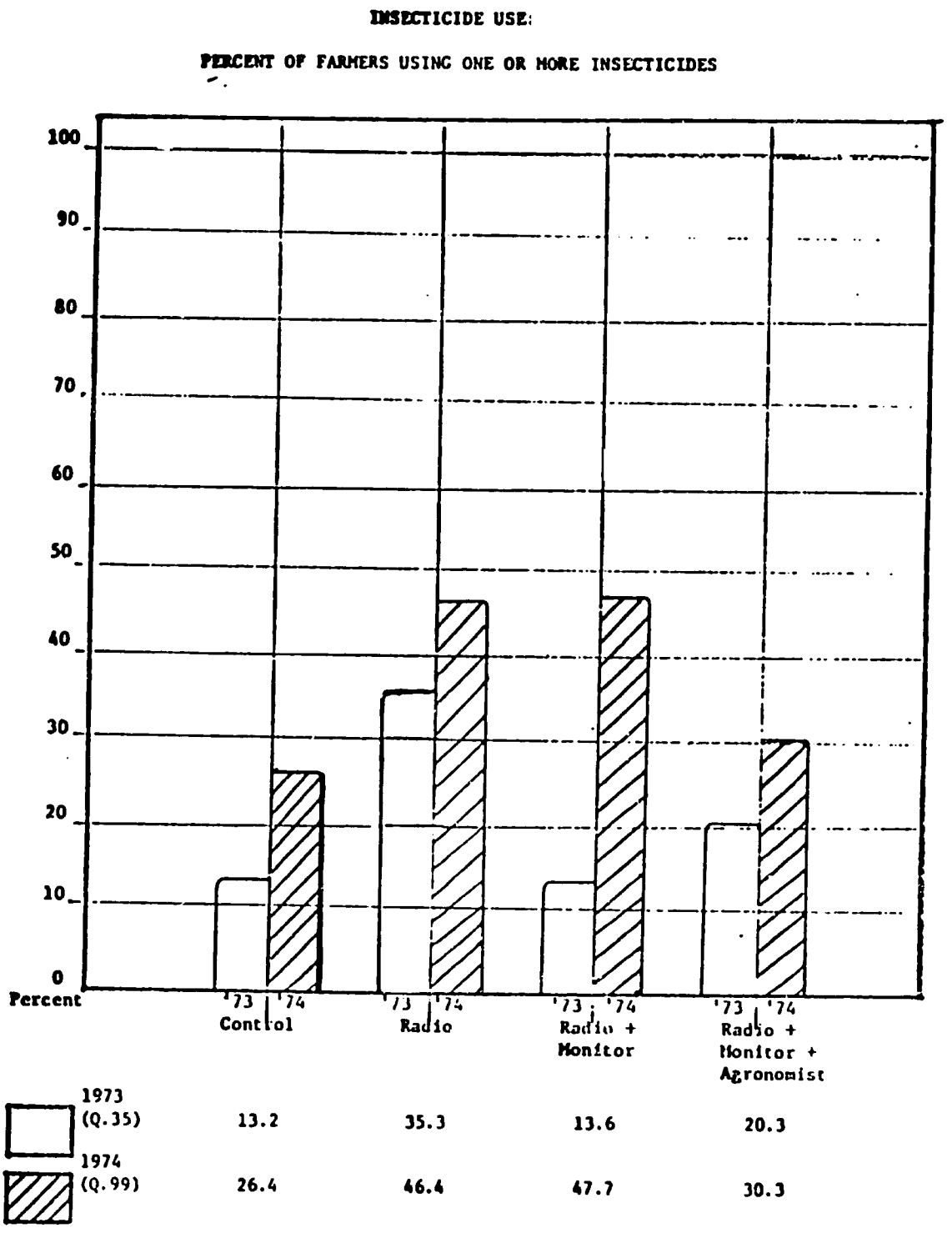
8. The increase in favorable attitudes has been higher than the increase in the actual use of recommended practices.

Figure 5 is a graphic representation of the combined responses of the farmers in all of the four sub-areas (Control, R, RM, RMA). There were a total of 3600 possible responses to each of the questions (Knowledge, Attitude, and Practice). The higher level of Knowledge (1656), the intermediate level of Attitudes (1388), and the lower level of Practices (704) is consistent with the literature on the subject.

Note: The total knowledge of recommended practices is a combination of knowledge present in 1973 plus new knowledge acquired in 1974.

For further details see Appendix II and Appendix III.

Figure 6

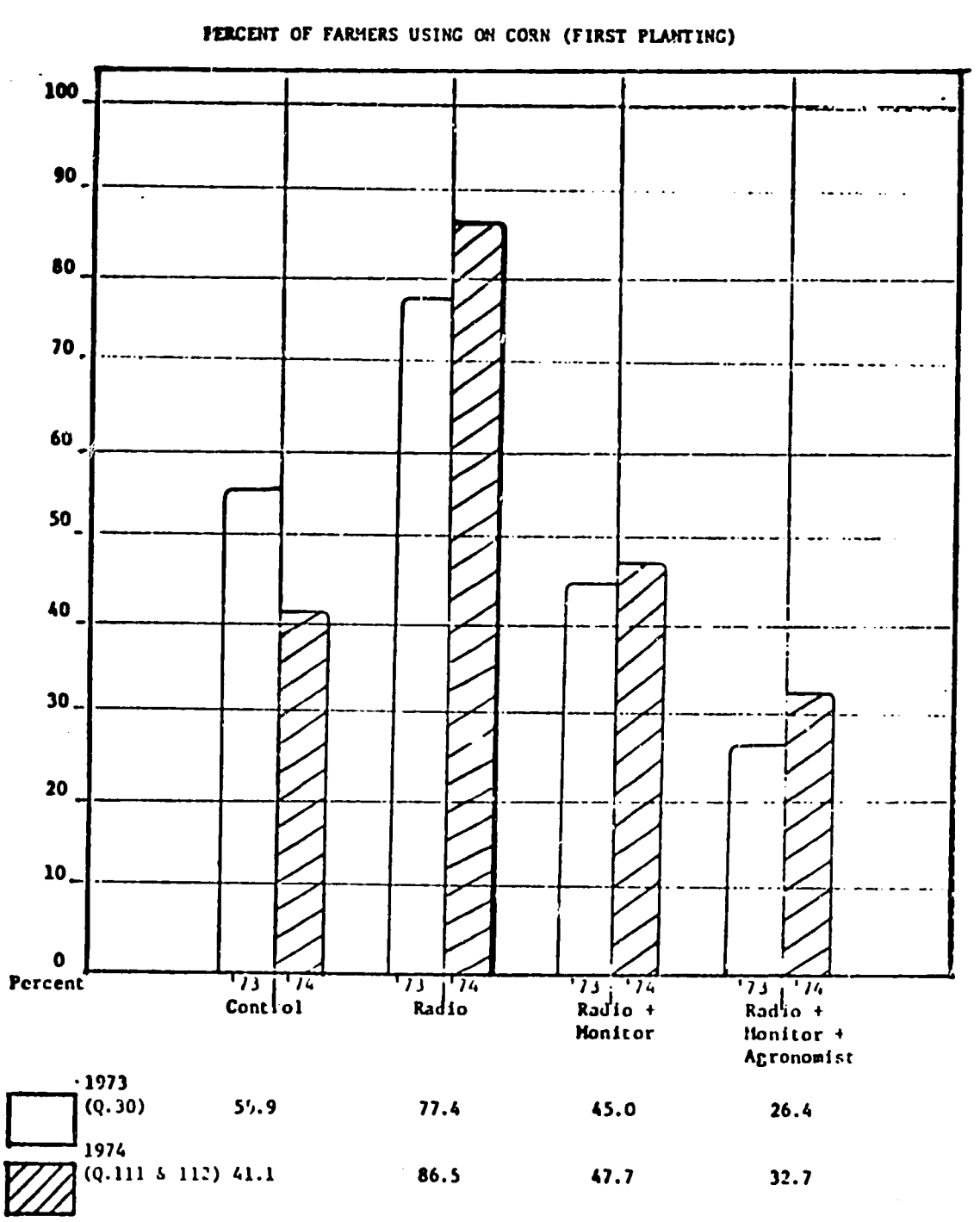


9. The use of insecticides has increased more in the Radio/Monitor treatment sub-area than in the other areas.

Figure 6 is a graphic representation of the responses of the farmers when asked if they used one or more insecticides on their crops. The greatest change occurred in the RM treatment sub-area, from 13.6% to 47.7% or a change of 34.1%. The other two experimental treatment sub-areas reported less change than the Control area. Due to the delay in practice adoption, the changes reflected here are more likely a result of factors not directly related to the BVE program.

For further details see Appendix 1.

Figure 7

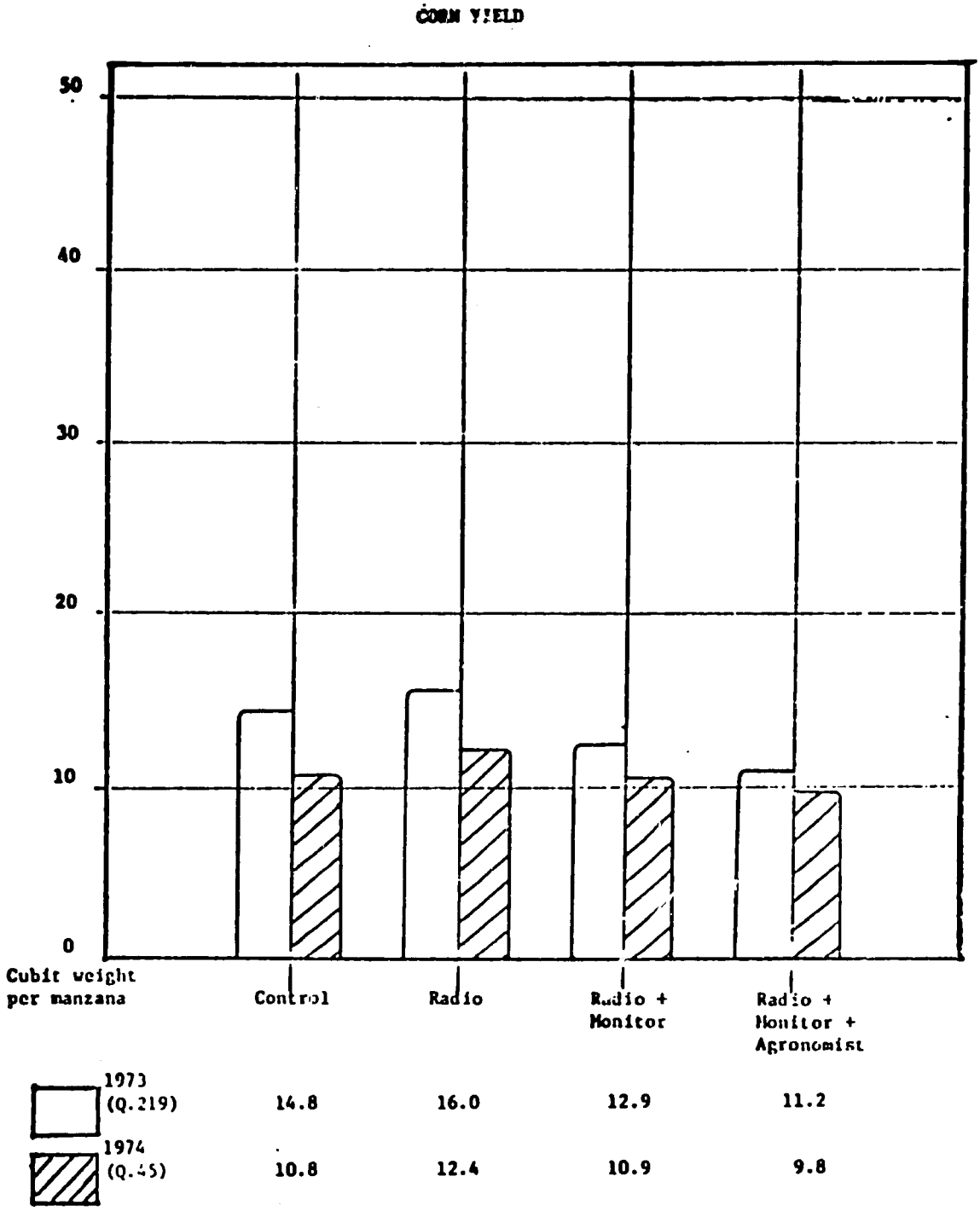


10. The proportion of farmers using fertilizer has increased in all of the experimental treatment sub-areas in contrast to a decrease in the control area. (Note: the evidence seems to confirm that more farmers are using fertilizer but in smaller quantities due to the shortage.)

Figure 7 is a graphic representation of the responses of the farmers, when asked if they used fertilizer on their first planting of corn. There was a decrease in those reporting fertilizer use in the control sub-area but not in the experimental sub-areas. It would appear that the RVE program did have an impact on fertilizer use but it also should be remembered that practices usually do not change in such a short time span. Other explanations for the difference between the control and experimental areas should be explored also.

For further details see Appendix I.

Figure 8

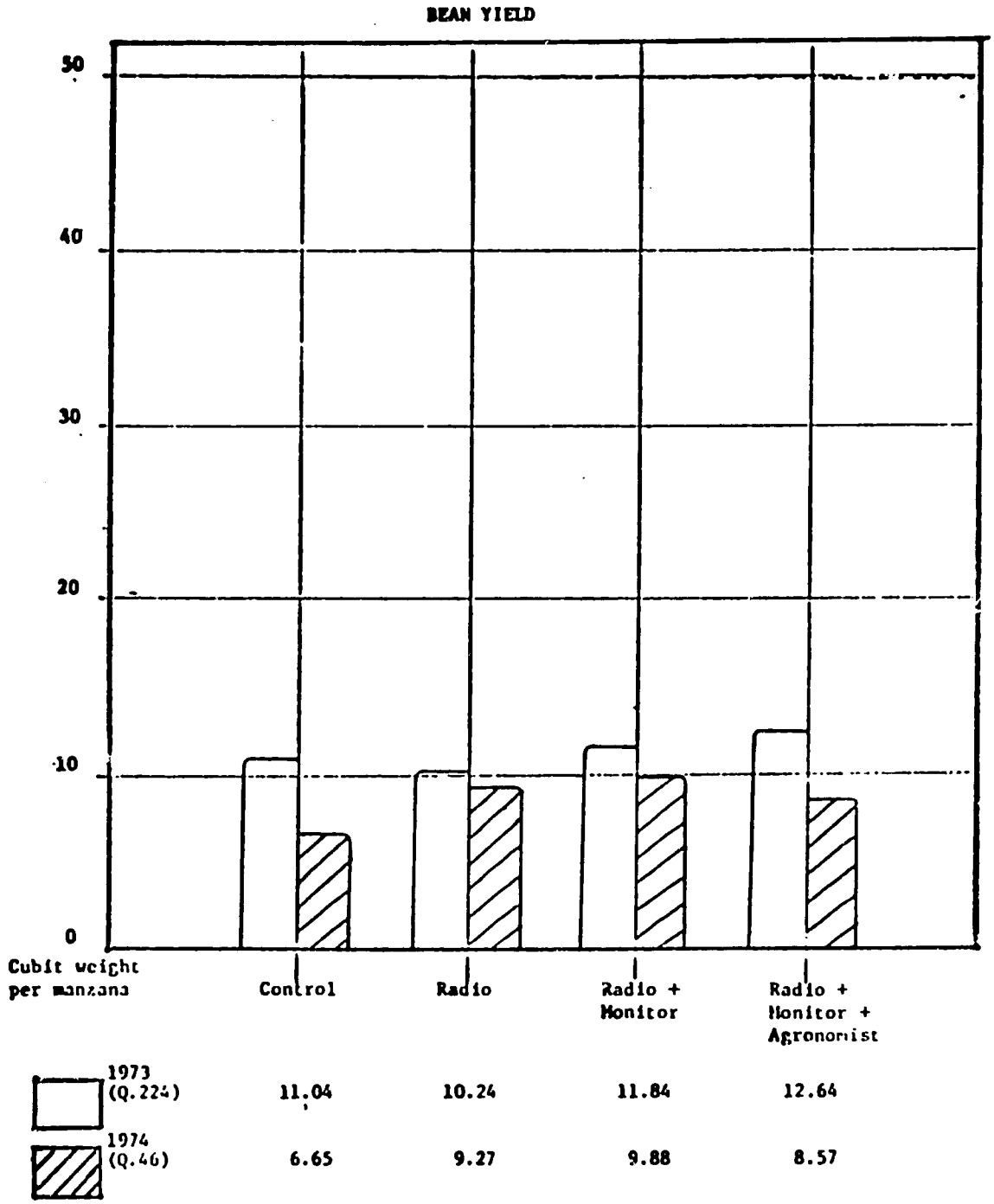


1. Crop yields in 1974 were lower than in 1973 in all treatment sub-areas as well as in the control area. (Note: field reports indicate adverse growing conditions as well as scarcity of fertilizers and other products during 1974 growing season.)

Figure 8 is a graphic representation of the responses of the farmers when asked about their corn yields. The yields are listed in cubit weight per manzana. As can be noted, all of the yields were lower in 1974. The adverse growing conditions and shortage of fertilizers are reported as being responsible for the decline.

For further details see Appendix I.

Figure 9



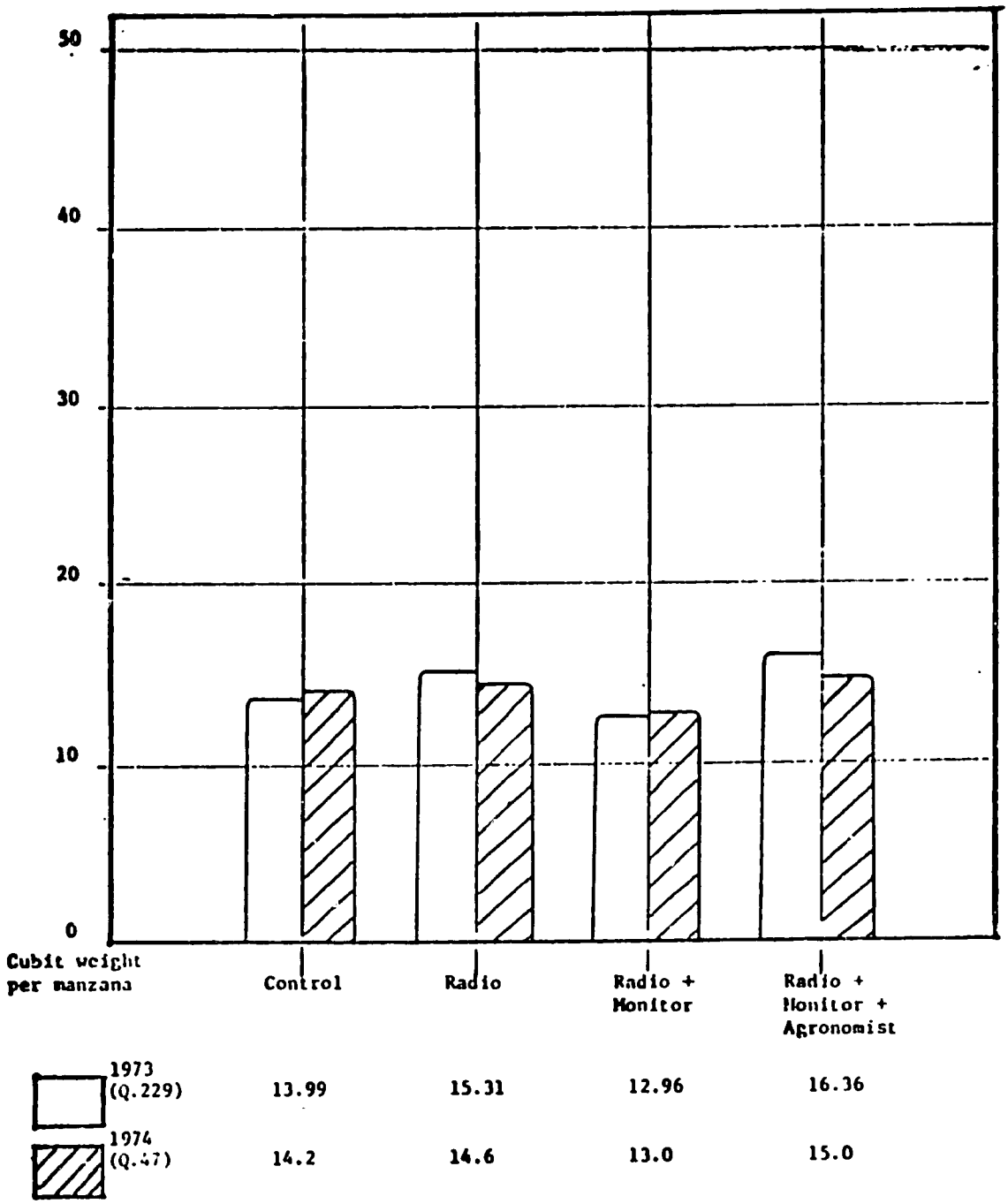
11a. Crop yields in 1974 were lower than in 1973 in all treatment sub-areas as well as the control area. (Note: field reports indicate adverse growing conditions as well as scarcity of fertilizers and other products during 1974 growing season.)

Figure 9 is a graphic representation of the response of the farmers when asked about their bean yields. The yields are listed in cubit weight per manzana. As can be noted, all of the yields were lower in 1974. The adverse growing conditions and shortages of fertilizer are reported as being responsible for the decline.

For further details see Appendix I.

Figure 10

SORGHUM YIELD



11b. Sorghum yields in 1974 were generally lower than in 1973, although not as pronounced as the other crop yields. This is a graphic representation of the response of the farmers when asked about the sorghum yields. The yields are listed in cubit weight per manzana. As can be noted, some of the yields were lower in 1974. The adverse growing conditions and shortages of fertilizer are reported as being responsible for the decline.

There was a slight increase in two of the sub-areas and a decrease in the other two. It would appear that the adverse conditions in 1974 did not effect the sorghum crop as greatly as corn and beans.

For further details see Appendix I.

BASIC VILLAGE EDUCATION: GUATEMALA

COMPARATIVE INFORMATION

SELECTED ITEMS FROM 1974 SURVEY

Major Area Comparisons

TABLE I

	Area/s	Oriente			Occidente	
		Quezada	Yupi	Ipala	Momos	Quiche
13.	Occupation: "Farmer" (%)	100.0	99.7	100.0	98.3	100.0
26.	Use hybrid seed corn (%)	3.2	1.6	0.4	0.0	0.0
45.	Average corn yield (growers only) (qq/mza)	11.0	10.45	9.92	19.0	15.82
46.	Average bean yield (growers only) (qq/mza)	8.53	6.88	18.0	5.2	2.61
99.	Use insecticides (%)	37.1	24.1	13.3	29.3	11.1
122.	Use chemical fertilizer on corn at flowering time (% using more than 1 qq/mza)	10.5	5.4	1.2	14.6	9.2
125.	Use chemical fertilizer on corn/ beans at flowering time (% using more than 1 qq/mza)	2.5	0.5	5.9	40.1	30.2
169.	Use credit (%)	18.1	9.1	7.9	25.2	12.5
174.	Visited by agronomist (%)	73.7	37.0	20.0	3.6	0.0
182.	Own land (%)	80.5	69.6	52.5	99.3	99.5
	Average size of land owned (owners only) (mzs)	3.05	2.52	2.73	2.35	1.57
183.	Rent land (%)	27.3	42.6	60.1	2.6	4.8
	Average size of rented land (renters only) (mzs)	1.93	1.87	2.14	0.0	0.8
184.	Has communal land (%)	9.2	4.5	0.4	0.3	0.0
	Average size of communal land (communal operators only)(mzs)	2.75	3.7	0.0	0.0	0.0
185.	Has sharecropped land (%)	10.7	19.2	0.0	0.9	0.5
	Average size of sharecropped land (Sharecroppers only) (mzs)	2.25	2.19	0.0	0.0	2.0

*The original computer print-out did not include all of the cases. All 373 cases have been included in thissummary. (Yupi)

TABLE I, continued

	Area/s	Oriente			Occidente	
		Quezada	Yupi	Ipala	Momos	Quiche
195.	Spends time working away (%)	46.1	42.6	28.3	77.3	50.0
210.	Listen to radio daily (%)	91.8	83.1	76.3	53.5	53.9
251.	Has toilet facilities (%)	7.7	0.8	5.1	9.5	0.5
254.	Average number of children	5.75	3.97	4.63	4.27	3.56
255.	Illiterate (%)	54.4	63.8	59.6	66.3	82.7
256.	Attended school (%)	37.4	29.1	30.1	27.5	15.9
	Average years of school attendance (attenders)	2.51	2.28	2.52	2.33	1.79

In addition to the formal evaluation there have been other measures of effectiveness that have been part of the ongoing field program. These are included in the annual report of field activities and serve to give a more complete view of results.

These findings coming from the formal evaluation are reported in a number of forms. The contract requires periodic reports but the majority of the effort of the evaluation staff is directed at the preparation of materials to meet programming needs of the field and to provide answers for other development projects throughout the world. In the following paragraphs both the periodic reports and those prepared to meet special needs are listed.

B. Evaluation Reports. There have been more than 50 Evaluation Reports prepared since the project began in 1973. These reports are prepared for immediate field use and distributed to a limited audience. They are often revised and included in other reports as a later date. Thirty-nine of these reports are listed below.

1. Procedures for Data Processing. 3 pp., September 19, 1973. Notes from discussion of data processing procedures with Ray, Rich, Anderson and Nesman on 9/18/73.
2. Evaluation of an Experiment in Non-Formal Education. 30 pp., April, 1974. Report prepared for presentation at Annual Review in State Department.
3. Procedures for Analysis of Data. 2 pp., September, 1974. Proposed procedures and questions to guide in the analysis of the data from the field surveys.
4. The Use of Paraprofessionals in Nonformal Education. 61 pp., February 7, 1975. A summary of general principles in the recruitment, training, supervision and evaluation of local leaders.
5. Data Processing Check on 1973 Baseline Survey (Phase I). 8 pp., February 24, 1975. Procedures and rationale for complete and final check of all data being used for computer analysis.
6. Radio Use in Occidente. 39 pp., February 25, 1975. A summary of radio ownership and use in the Momos area of Occidente. The 1974 Momos data is also compared to the 1973 Quezada data.
7. Field Interview Techniques. 7 pp., February 24, 1975. Suggestions for field interviewers made by Astolfo Mellado, field interviewer for Oriente 1973-74.
8. Behavioral Objectives and Time Sampling. 28 pp., February 26, 1975. A summary of the 1974 Time Sample Surveys in the Quezada area.
9. Comparison of Selected Characteristics of Farmers in Oriente and Occidente. 1 pg., February 28, 1975. A comparison of 11 items from 1974 Baseline Survey in sub-areas of Ipala (Ote.) and Momos (Occ.).
10. Ranking System. 2 pp., February 28, 1975. A proposal for a method to measure change using a scoring system for recommended practices.
11. Comparative Information From 1974 Baseline/Year-End Survey. 13 pp., April 16, 1975. A selection of 24 items to compare major areas and treatment areas in Oriente and Occidente including information on occupation, land tenure arrangements, radio use, home sanitary facilities, family size, education, selected agricultural practices and crop yields (with revisions on May 30).
12. Disease Control: Momostenango. 5 pp., April 22, 1975. A summary of responses relating to disease control for Momostenango from 1974 Baseline Survey.

13. Disease Control: Ipala. 5 pp., April 22, 1975. A summary of responses relating to disease control for Ipala from 1974 Baseline Survey.
14. Insect Control: Momostenango. 5 pp., April 23, 1975. A summary of responses relating to disease control for Momostenango from 1974 Baseline Survey.
15. Insect Control: Ipala. 5 pp., April 24, 1975. A summary of responses relating to insect control for Ipala from 1974 Baseline Survey.
16. Measurement of Change 1973-74 in Oriente I Experimental Area. 5 pp., April 28, 1975. Outlines procedure for scoring and scaling of items on 1973 and 1974 surveys so that an accurate measure of change can be obtained (see May 30 revision).
17. Disease Control: Yupi. 5 pp., May 3, 1975. A summary of responses relating to disease control for Yupi from 1974 Baseline Survey.
18. Insect Control: Yupi. 5 pp., May 3, 1975. A summary of responses relating to insect control for Yupi from 1974 Baseline Survey.
19. Insect Control: Chichi. 5 pp., May 5, 1975. A summary of responses relating to insect control for Yupi from 1974 Baseline Survey.
20. Disease Control: Chichi. 5 pp., May 5, 1975. A summary of responses relating to disease control for Chichi from 1974 Baseline Survey.
21. Oriente Evaluation Time Line. 4 pp., May 9, 1975. An outline of the research design for Oriente including major areas, treatment areas, villages and respondents for each year.
22. Occidente Evaluation Time Line. 3 pp., May 9, 1975. An outline of the research design for Occidente including major areas, treatment areas, villages and respondents for each year.
23. Revised Computer Card and Case ID Numbering System. 8 pp., May 28, 1975. A standardized system to distinguish major areas, treatment sub-areas, villages, individual cases, and survey number (revised June 6, 1975).
24. Notice of Coding Change. 1 pg., May 30, 1975. A notification of an error in treatment area coding in the 1974 Quezada Year-End Survey data.
25. Disease Control: Quezada. 5 pp., May 30, 1975. A summary of responses relating to disease control for Quezada from the 1974 Year-End Survey.
26. Insect Control: Quezada. 5 pp., May 30, 1975. A summary of responses relating to insect control for Quezada from the 1974 Year-End Survey.
27. Measurement of Change 1973-74 in Oriente I Experimental Area. 5 pp., May 30, 1975. An update on the Evaluation Report of April 28 regarding scoring and scaling of items on the 1973 and 1974 surveys so that an accurate measure of change can be obtained.
28. Evaluation Report for Annual Review. 57 pp. of background material prepared to accompany slide presentation at State Department on June 16/17, 1975.
29. Annual Review - Project Presentation: An Outline of Topics Discussed. 12 pp., June 20, 1975. Summary of topics discussed.
30. Results of 1974 BVE Program in Jutiapa, Guatemala. 35 pp. with 34 graphs, July 22, 1975. Graphs show both 1973 and 1974 levels. Items include: information sources, technical assistance, credit use and recent practice changes; land clearing and planting methods; insect, disease and weed control.
31. Characteristics of "Progressive" Farmers in Jutiapa. 1 pg., August 8, 1975. A summary of items found in correlation analysis of 1973 Baseline data.
32. Data Summary: Quezada. 76 pp., July, 1975. A complete summary of all responses by treatment sub-areas on 1974 Year-End Survey in the Quezada area.

33. Data Summary: Yupi. 76 pp., August, 1975. A complete summary of all responses by treatment sub-areas on 1974 Baseline Survey in the Yupi area.
34. Data Summary: Ipala. 76 pp., August, 1975. A complete summary of all responses by treatment sub-areas on 1974 Baseline Survey in the Ipala area.
35. Comparative Information for Occidente. 29 pp. with 28 graphs, August 15, 1975. Graphs show selected items from 1974 Baseline Survey for treatment and control sub-areas of Momos and Chichi.
36. Average Amount of Crop Land Available for Planting in 1974. 2 pp. with 1 table, August 20, 1975. A summary of total crop land available for planting.
37. Time Sample Data Processing Procedures. 2 pp., August 25, 1975. Revised procedures and checklist used with each time sample survey.
38. Judges' Rating of Questions Used in 1974 Baseline Survey. 4 pp., August 29, 1975. Check on validity and reliability of each question asked in survey.
39. Data Summary: Momos. 76 pp., August, 1975. A complete summary of all responses by treatment sub-areas on 1974 Baseline Survey in the Momos area.

C. Working Papers. The working papers represent an intermediate step in the process of reporting the findings from this unique experimental program in nonformal education. These papers are circulated to a limited audience for comments and suggestions. At a later date necessary revisions and corrections will be made so that the papers can be circulated to a wider audience through the Academy for Educational Development or other suitable publishing outlets. The following paragraphs describe the working papers that have been prepared to date. Fifty bound copies of each have been prepared and distributed.

1. The General Characteristics of Subsistence Farmers in the Department of Jutiapa, Guatemala. Working Paper No. 1, University of South Florida, October, 1974, 93 pp. This is a descriptive report based on the data from the surveys conducted in November, 1973. It contains eight pages of summary narrative and 81 pages of tables. The text is included in Appendix V.
2. The Agricultural Characteristics of Subsistence Farmers in the Department of Jutiapa, Guatemala. Working Paper No. 2, University of South Florida, February, 1975, 130 pp. This is a descriptive report based on the data from the baseline surveys conducted in November, 1973. It is much like Working Paper No. 1 except that it deals in agricultural characteristics instead of general characteristics. It contains 44 pages of summary narrative and 86 pages of tables. A summary is included in Appendix VI.
3. Evaluation of Changes in Knowledge, Attitude and Practices Among Subsistence Farmers in the Department of Jutiapa, Guatemala: A Time Sampling Methodology. Working Paper No. 3, University of South Florida, May, 1975, 134 pp. This paper is of both descriptive and analytical nature based on the data collected in the 1974 monthly time sample surveys. It contains 19 pages of narrative and 115 pages of tables. For further details see Appendix III.

D. Professional Papers. Measuring the results of a non-formal educational project such as BVE go far beyond the requirements for increased efficiency in the project itself. The expected findings even go beyond the needs of national development of Guatemala. The results of this unique experiment have far reaching consequences for development the world over. Not only applied natural scientists have interest in the results but all branches of the behavioral sciences are interested in the theoretical aspects of attitude and behavior change in non-laboratory settings. Guatemala offers a special opportunity for this study because of the present stage of development and the presence of diverse cultures.

In an attempt to communicate some of the preliminary findings from the project two professional papers have been prepared by the evaluation staff with the assistance of the field staff. These papers are listed below and summaries are found in Appendix VII and Appendix VIII.

1. Innovativeness Among Subsistence Farmers in Guatemala by Nesman, Rich and Ray. This is an analytical paper based on the data from the baseline surveys of November, 1973. This paper is 18 pages in length and was presented at the annual meetings of the Rural Sociological Society in Montreal, Canada in August, 1974.
2. The Comparative Study of the Impact of Mass Communications on Subsistence Farmers in Guatemala by Nesman and Rich. This is a 26 page analytical report based on the data from the time sample surveys conducted during 1974. The paper was presented at the Southern Sociological Society Meeting held in Washington, D. C. in April of 1975. The different experimental treatments (R, RM, RMA) were compared with each other and with the control group using tests of statistical significance. Some of the results of this paper were incorporated in Working Paper No. 3.

E. Practice Manuals. If the experience from the BVE project is to be applied in other projects and places, it is important that the procedures as well as the results be published. The practice manuals are an attempt to provide a "how to do it cook book" for others to use. This is particularly important for the educational programming activities but it is of equal importance for the evaluation and research aspects as well. Outlines have been prepared for the following practice manuals on evaluation subjects and some are now in first draft form:

1. Evaluation Research in Nonformal Education (including basic concepts in the evaluation of field projects).
2. Recruitment, Training and Supervision of Paraprofessionals in Nonformal Education.
3. Population and Area Selection Procedures for an Experimental Program in Nonformal Education.
4. Questionnaire Preparation for Field Evaluation of Nonformal Education.
5. The Use of Behavioral Objectives in the Evaluation of Nonformal Education Programs.
6. Time Sampling and Short Term Feedback Mechanisms in Evaluation.
7. The Use of a KAP Format for the Evaluation of Nonformal Education.
8. The Politics of Evaluation of Field Projects.

F. Monthly Reports. A report is prepared each month that outlines the activities of the Tampa based evaluation staff for the month ending and the proposed activities for the next month. These reports are from two to three pages in length and 18 have been prepared to date. This report also serves an organizing function and establishes job priorities. Copies are sent to Washington, to Guatemala and to administrative officials here at the University.

G. Interim Reports. This present report is the second interim report prepared in accordance with contract requirements. It also serves the same organizing function as the monthly reports.

H. Annual Review. A packet of materials is prepared each year to accompany the oral presentation for the annual review at the State Department in Washington.

I. Annual Budget and Contract Proposal. Each year a proposal is submitted for renewal of the AED/USF evaluation sub-contract.

J. Final Project Report. The present contract requires that a final evaluation report will be submitted by June 30, 1977.*

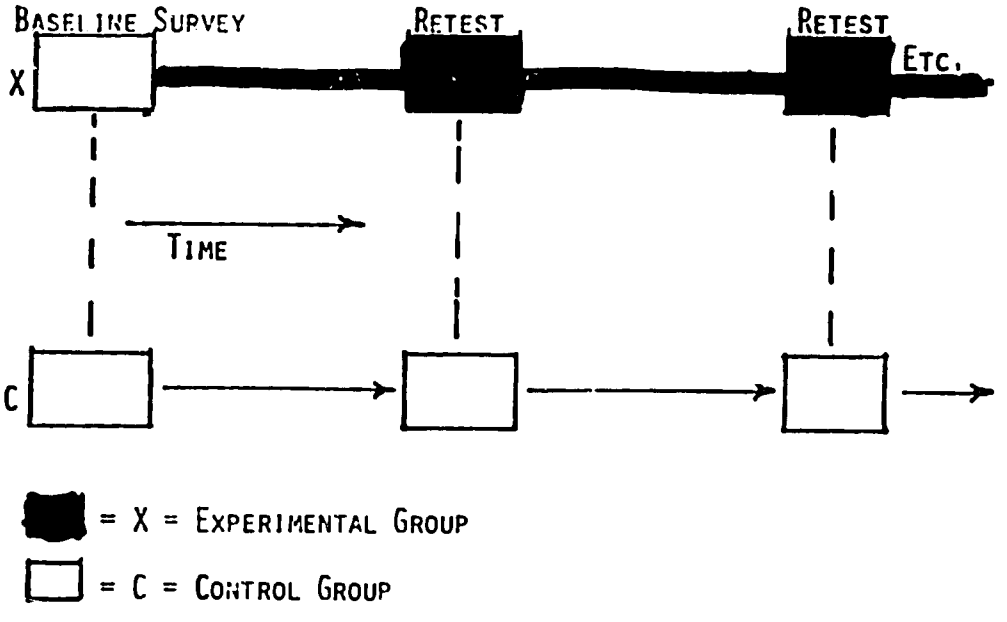
II. EVALUATION PROCESS

It is not always easy to separate the overall goals or products from the process or activities by which the goals are achieved. In order to measure the impact of the Basic Village Education it was necessary to develop a research design. The features of the design are outlined in this section. The evaluation activities, both in the field and at the University of South Florida, are also included.

A. Evaluation Research Design. A modified form of standard experimental design was selected to meet the evaluation requirements of the Basic Village Education. Figure 11 best describes the basic experimental design. Change is measured by using an experimental group which receives the treatment to be measured (educational program in this case) and a control group which is not exposed to the treatment. It also includes a pre-test before the treatment begins and a post-test after the treatment.

Figure 11

BASIC FEATURES OF EXPERIMENTAL DESIGN



DESIGNED TO MEASURE THE RESULTS OF AN EXPERIMENTAL TREATMENT OVER TIME

*In light of possible design changes due to the loss of a year in programming in 1974 this date may need to be reconsidered. Also the scope and content of the report merits discussion.

The characteristics of the Basic Village Education design are described below:

1. It measures change by treatment over time. The BVE program has been prepared in such a way that one group of people will receive new information by way of radio (R), another group of equal size will receive radio accompanied with community meeting led by a local leader called a monitor (RM) that has had some training, and a third group that will have radio information with monitor accompaniment and the addition of a technical advisor (RMA) that visits the farms (see Figure 12). Two additional aspects have also been added at the suggestion of sponsoring agencies. A monitor control (CM) group has been added which will get the same program treatment as the RM sub-area except it will not get radio broadcasts. Provision has also been made for field testing of different combinations of materials and media within the treatment areas.

   In order to measure the impact of these three information treatments er time using experimental design which includes both experimental and control groups, the control group must be selected with all of the same characteristics as the experimental group except that it receives no treatment as part of the educational program. Both experimental and control groups are measured before the educational program is initiated and again at periodic intervals. In the BVE program, there are three experimental groups (R, RM, and RMA) and two control groups (C and CM). All are of equal size (5 villages each with approximately 125 total people). The baseline survey was completed in November of 1973 in Quezada and Yupi and the same people were reinterviewed in November of 1974.
2. Monthly measurement of change. The monthly time sample is an additional feature of the design for formal evaluation in the BVE program. This gives immediate feedback on the results of the prior months educational programming. It also serves to explain and confirm the results of the surveys done at the end of the year. The time sample feature can be observed in Figure 12.
3. It measures change by geographical area over time. It would be expected that any change in geographical location would be accompanied by changes in many things that could effect the results of an educational program such as BVE. In order to see how geographical difference might effect the results the original area chosen for programming and measurement in 1974 was replicated to include two additional areas in Oriente for programming and evaluation in 1975 and 1976. These areas are Yupi and Ipala.

   In addition to the people and villages chosen for the expanded program, another group was chosen for a further experimental treatment. This fourth treatment (CM) which was mentioned above is identical to the radio-monitor (RM) except it does not include radio. In one way it serves as a control to test radio against no radio, and in another way it gives a link between the experimental and control areas. This design can be observed in Figure 13. The three geographical areas thus included in Oriente are Quezada, Yupi and Ipala.
4. It measures change across cultural areas.* One of the reasons that

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*This aspect of the design has become inoperative because of programming delays in Occidente (see Amendment).

Figure 12

1974 BVE EXPERIMENTAL PROGRAM

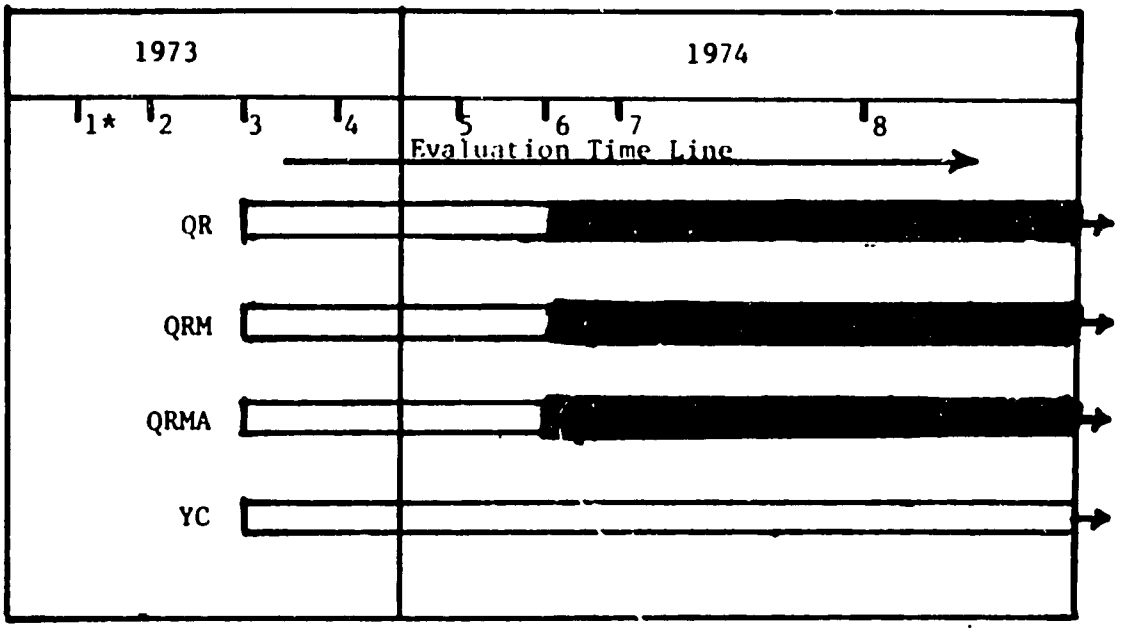

Figure 12 is a graphic representation of the research design used in measuring the results of the experimental program of BVE during 1973 and 1974. The stages are outlined in the Evaluation Time Line:

1. *Prior to July 1, 1974 - Planning stage. No educational program.
2. July-August 1973 - Selection of areas and farmers to be interviewed during life of project. No educational program.
3. August-November 1974 - Baseline survey interviews with farmers in four sub-areas (three to be used as experimental and one for control). No educational program.
4. November 1973-November 1974. Program preparation.
5. January 1974 - 1973 crop yield survey. A 20% sample of all farmers interviewed in baseline survey. No educational program.
6. March 1974. Educational program initiated in three experimental areas in Quezada Valley: Radio = QR; Radio/Monitor = QRM; and Radio/Monitor/Agronomist = QRMA. The control area in Yupi (YC) is continued with no program.
7. April 1974-September 1974. Monthly time sample surveys. A 20% sample of all farmers of experimental and control sub-areas interviewed each month for seven months.
8. September-November 1974. Year-end survey. Interviews conducted with all farmers of all four sub-areas that were included in original baseline survey.

Figure 13 - BVE EXPERIMENTAL PROGRAM - PLAN FOR ORIENTE 1973-1977

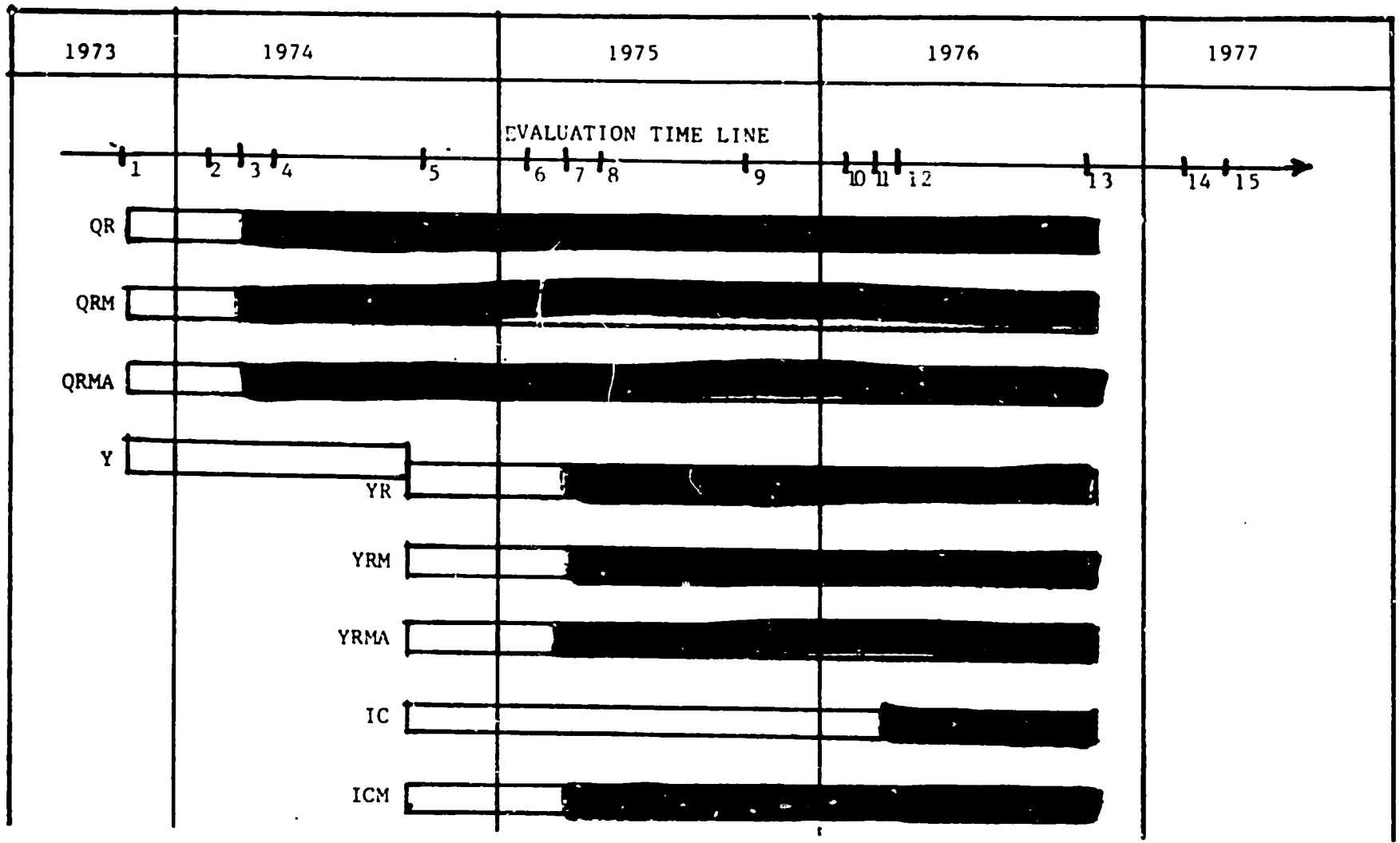

Figure 13 is a graphic representation of the research design as presently being used in the Oriente area of Quezada. The stages are outlined in the Evaluation Time Line: 1) August-November 1973, Baseline survey in sub-areas selected for QR*, QRM, QRMA, and YC. 2) January 1974, a yield survey for 1973 crops. 3) March 1974: Initiation of educational program. 4) April-September 1974: Monthly time sample surveys. 5) September-November 1974: Year-end survey Quezada areas; baseline surveys for Yupi and Ipala. 6) January 1975: Yield Survey for 1974 crops. 7) March 1975: Initiation of program in new areas. 8) April-September 1975: Time Sample Surveys all areas. 9) September-November 1975: Year-end surveys all areas. 10) January 1976: Yield survey for 1975 crops. 11) March 1976: Initiation of program in IC sub-area. 12) April-September 1976: Time Sample Surveys all areas. 13) September-November 1976: Year-end survey. 14) January 1977: Yield survey for 1976 crops. 15) January-July 1977: Final analysis and reporting.

*Areas: Q = Quezada; Y = Yupi; I = Ipala. Treatments: R = Radio; M = Monitor; A = Agronomist; C = Control.

Guatemala was chosen as a setting for this experiment in nonformal education was because of the existence of more than one culture within the national boundaries. The contrasts between the Ladino culture of the Oriente and the Indian culture of the Occidente offer excellent possibilities for comparative measurement of change. A design was developed for Occidente which included the same features as that in Oriente. When added onto the Oriente design it offers the opportunity for a number of comparative measurements:

1) Month by month with time samples.
2) Year by year with the baseline and year-end surveys.
3) By four experimental treatments.
4) By geographic area in five separate settings.
5) Across two major cultures in Oriente and Occidente.

5. It measures changes by types of practices. Even within a given subject matter area such as agriculture, not all practices are equally subject to change. A comparative study of change by practice can give further assistance in the selection and timing of program content. The baseline and year-end surveys contain 258 items that can be analyzed separately and compared to each other. Further comparison of these items can be made through the analysis of the time sample surveys (see Table I) and yield surveys.
6. Measures Change in Total KAP Over Time. If the educational programs of the Basic Village Education are effective, there should be some measurable changes in the agricultural practices of the people. At the same time it is clear that traditional people do not immediately change their behavior. The sequence of change that takes place starts as the point of new knowledge (K), continues with a favorable attitude (A), and finally may result in practice (P) change. In a short time span of a year (or even in the total evaluation time span allocated to the BVE program) there may be little change in agricultural practices (P) but there should be a noticeable change in knowledge (K) and attitudes (A). For this reason the measuring instruments (questionnaires) used have included provisions for measuring knowledge (K) and attitudes (A) as well as practices (P).
7. Relation of change to age, size of farm, education, travel, contact with change agents, group membership, risk orientation, off farm work, diet, etc. Not all people are as willing or able to change. In any given population of people it is important to recognize those individuals and communities that are more receptive to change so that limited resources can be used where more results are possible. The survey data can be analyzed to give this kind of information (see Evaluation Report 31, Appendix IX for a preliminary analysis of the characteristics of the "progressive" farmers in the Quezada area).
8. Modification of the control group. A fundamental modification in experimental design has been made regarding the control group as can be noted in Figure 13. The control group is discontinued after the first year-end survey. This modification was necessary due to the non-laboratory nature of the project. It is impossible to continue to ask people questions without arousing their interest in the subjects and their desire to get information related to problems that they face daily. Survey research serves to stimulate the desire for new information. The requests from individuals as well as the combined political pressure left no alternative but to include the control groups in the experimental treatment areas after the first year. Projections from the first year will be made into

following years to approximate the effect of the treatments vs. the control. With the addiiton of a radio-free monitor treatment in both Oriente and Occidente, a measure of the effect of radio vs. no radio will be measured.

9. Overall Evaluation Design. The overall design for the measurement of change as a result of the experimental BVE program can best be observed in Figure 14. It includes provisions to measure change comparatively: 1) over time, 2) by experimental treatments, 3) by geographical areas, 4) by month for immediate feedback, 5) across-cultures, 6) by levels of knowledge, attitude and practice, 7) by practice, and 8) by socio economic characteristics of the people and villages.*

In carrying out the design, there were over 2200 interviews conducted in 1974. There will be approximately 3500 additional interviews conducted during 1975 and a like amount in 1976. The total scope of the data gathering requirements of the project can be observed in Figure 16 with over 10,250 separate interviews anticipated over the four-year period.

B. Evaluation Activities.

1. Selection of Areas and Individuals for Interviewing. The areas and the individuals that were included in the baseline survey of 1973 and the time sample interviews during the 1974 programming year were all re-interviewed in the year-end survey of November 1974. There were 506 farmers in the original sample and there were 472 of these still included in the sample at the end of the year. They were distributed as follows:

1)	Quezada (Oriente)	15 villages
		370 farmers
2)	Yupi (Oriente)	5 villages
		136 farmers

In addition to the above, the following areas and individuals were added at the time of the November survey (note: for additional details see Appendix X, Evaluation Time-Line for Oriente and Occidente):

3)	Yupi (Oriente)	8 villages
		237 farmers
4)	Ipala (Oriente)	6 villages
		240 farmers
5)	Momos (Occidente)	13 villages
		400 farmers
6)	Chichi	3 villages
		208 farmers

The search and selection of additional areas and individuals to be included in the 1975 programming and measurement population has been a long and detailed process. The major responsibility for this job has been with the field staff in Guatemala. A number of field trips were

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*As has been stated in the amendment, much of the comparability of the design has been lost due to the loss of programming in Occidente during the 1975 agricultural year. The alternative that will most nearly approach the original design proposed an additional year of experimental programming and measurement in the Occidente. The revised design has been prepared in Figure 15.

Figure 14

BVE EXPERIMENTAL PROGRAM PLAN FOR OCCIDENTE 1973-1977*

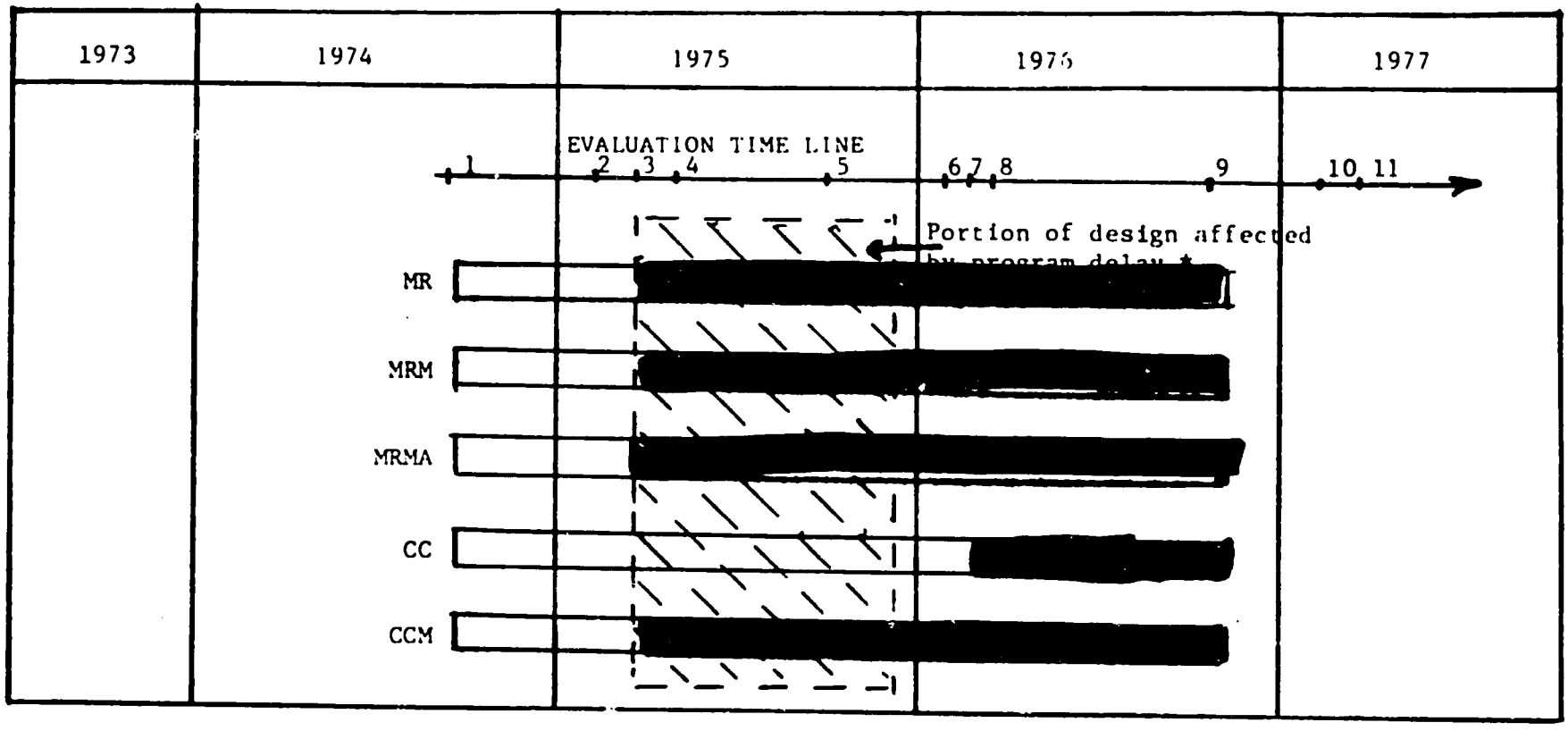

Figure 14 is a graphic representation of the research design as proposed for use in the Occidente area of Guatemala. The stages are outlined in the Evaluation Time Line: 1) August-November 1974: Baseline survey in MR**, MRM, MRMA, CC, and CCM. 2) January 1975: Yield survey for 1974 crops. 3) March 1975: Initiation of educational program. 4) April-September 1975: Monthly Time Sample Surveys. 5) September-November 1975: Year-end survey. 6) January 1976: Yield survey for 1975 crops. 7) March 1976: Initiation of educational program in CC sub-area. 8) April-September 1976: Monthly time sample surveys. 9) September-December 1976: Year-end survey. 10) January 1977: Yield survey for 1976 crops. 11) January-July 1977: Final analysis and report.

*The educational program was not initiated in March 1975 as planned so that the design has become inoperative.

**Areas: M = Momos; C = Chichi. Treatments: R = Radio; M = Monitor; A = Agronomist.

See Report Amendment pp. i - iv and alternate design in Figure 15.

BVE EXPERIMENTAL PROGRAM - ALTERNATE PLAN FOR OCCIDENTE 1973-78*

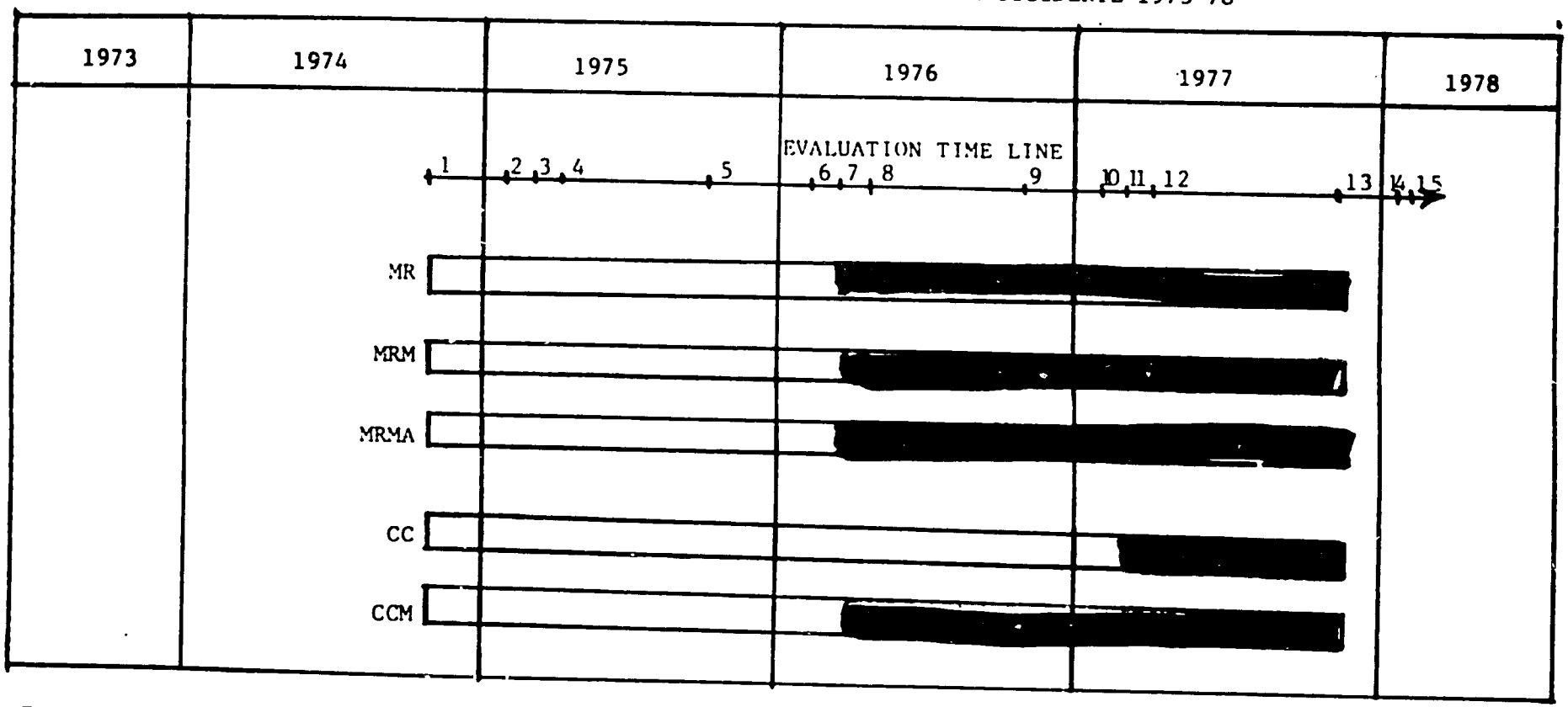

Figure 15 is a graphic representation of the research design as proposed for use in the Occidente area of Guatemala. This does not effect in any way the plan for Oriente (Figure 13) which remains in effect. The stages are outlined in the Evaluation Time Line: 1) August-November 1974: Baseline survey in all sub-areas. 2) January 1975: No yield survey. 3) March 1975: Educational program not initiated. 4) April-September 1975: Monthly time sample surveys not conducted. 5) September-November 1975: Year-end survey (all sub-areas considered as program-free control areas during year). 6) January 1976: Yield survey for 1975 crops. 7) March 1976: Initiation of educational program in all sub-areas except CC. 8) April-September 1976: Monthly time sample surveys. 9) September-December 1976: Year-end surveys. 10) January 1977: Yield survey for 1976 crops. 11) March 1977: Initiation of educational program in CC sub-area. 12) April-September 1977: Monthly time sample surveys. 13) September-December 1977: Year-end survey. 14) January 1978: Yield survey for 1977. 15) January-July 1978: Final analysis of Occidente data, cross-cultural comparison and final report.

*See Report Amendment pp. i - iv.

Figure 16

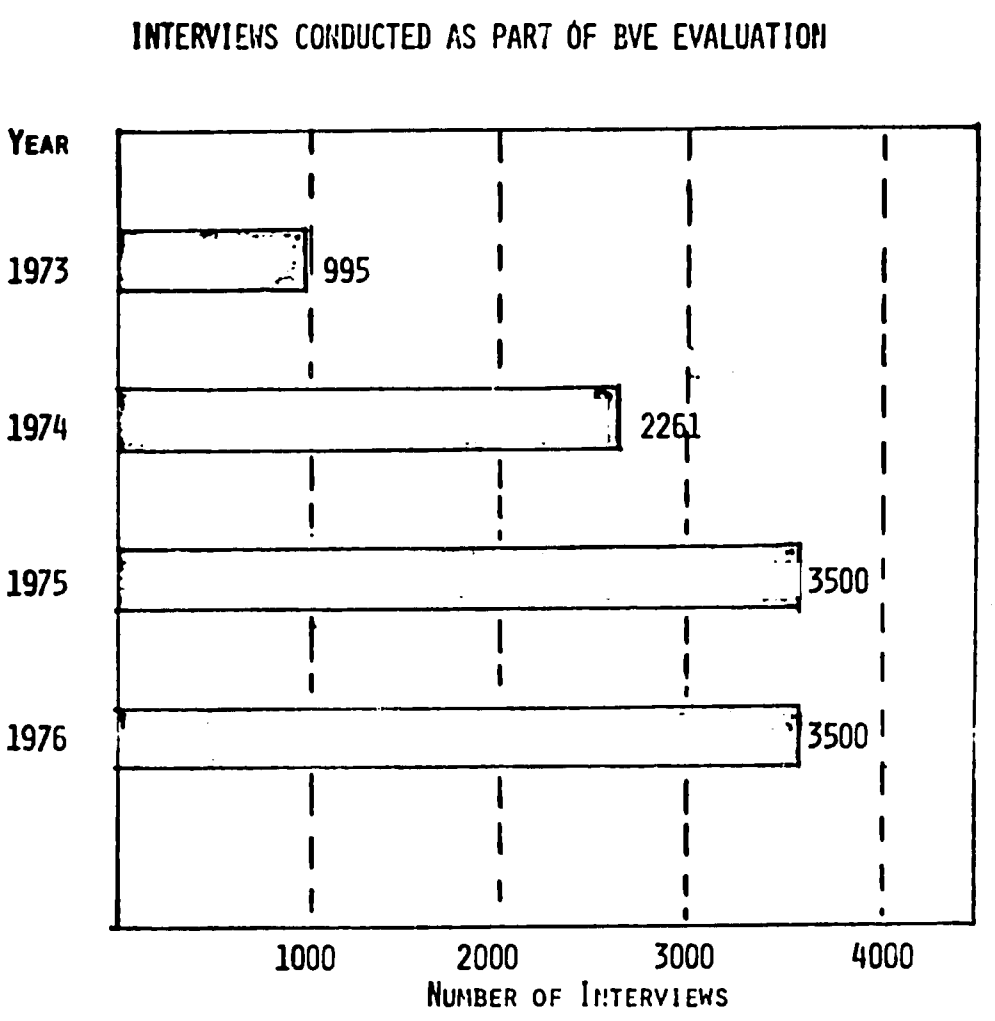

Figure 16 is a graphic representation of the number of interviews that will be conducted as part of the measurement of the results of the Basic Village Education experimental program. In 1973 there were 995 interviews conducted; in 1974 there were 2261; and 3500 are planned for both 1975 and 1976.*

*Due to delays in 1975 programming in Occidente, some modifications will be made. See amendment pp. i - iv.

necessary as part of the selection process and the evaluation staff participated in these when possible The criteria that were used by the evaluation staff as they assisted the field staff in the selection of areas was as follows:

Criteria for Selection of Villages:

1) Small farms 0.5 to 12 mza
2) Similar agricultural practices
3) Illiterate: 50%+
4) Communicate more with each other than with people in another village
5) Possibility of some change and improvement
6) No extraordinary social or political conditions

Criteria for Selection of Sub-Areas:

1) Villages form a general cluster that tend to fit together
2) All villages have necessary characteristics listed above and are generally alike

Criteria for Selection of Experimental Area (Including Control):

1) As near alike in sub-areas as possible and still allow enough distance for a radio-free control area

The steps also included: obtaining census data on the areas; obtaining maps; determining the soil types, the climate and the cropping practices; and determining the political and social characteristics of the area. As final selection was approached, contact was made with all of the political leaders and those representing the agricultural and educational agencies so that full understanding of the project would be possible.

This general process was followed in both Oriente and Occidente. In addition, there were special cultural conditions that were taken into account in the Occidente area. The assistance of Dr. Carmack was essential in this area (see Carmack report, Field Report Section IVC 1).

2. Preparation of the 1974 Baseline/Year-End Questionnaire. The 1973 baseline questionnaires (in 1973 the baseline survey was divided into two parts that were administered separately at an interval of one month) were used as a starting point in the development of the 1974 questionnaire. There were many revisions that seemed necessary but it was also important that the questions remain as near alike as possible for comparability. The interviewers that had used the 1974 questionnaire evaluated each question and their comments were included in the revisions. All of the tabulation summaries were examined to see if the old questions had been useful and accurate. The coded answers were checked as to completeness as well as direction. The flow of questions was checked to see if the sequence was logical and non-threatening. Each of the questions was checked for adaptability to all of the geographical areas. The final refinements were completed by the evaluation field supervisor with the help of the interviewers. A full report of the procedures are included in the Field Staff report, sections IV B5 and IV C8. Also a field report is included in the appendix section of this report (see Appendix XI).
3. Field Interviewing and Data Processing. The first step in the field interviewing process was the selection of interviewers. Fourteen interviewers were selected for Oriente and eight for Occidente. The interviewers were selected on the basis of personality, work experience in rural areas and educational background. In addition, those working in the Occidente were fluent in the Quiche dialect.

The interviewer training period lasted for two weeks and included: team building exercises, techniques of interviewing, understanding of survey and evaluation, field testing of the questionnaire, and final revision of the questionnaire (see Appendix XII and Field Report Sections IV B5 and IV C8).

Interviewing was conducted in a central location and each person who had been selected in the sample was notified as to the time and place. Prior to this, all of the necessary arrangements had been made with local leaders so that there were no missunderstandings as to the intent of the interviewing. Each interview was done separately and was of approximately 30 minutes duration. Upon completion, the interviewer checked to see if all answers had been recorded correctly. Before leaving the field, a further check was made by the team supervisor.

Before shipment to Tampa, the questionnaires were checked further, coded and transferred to sense sheets. The complete procedure used in Guatemala is included in Appendix XIII.

In Tampa the material sent from the field was checked again and transferred from sense sheets to computer cards for processing. Before the cards are sent to the computer, a complete case printout is prepared for rechecking against the original questionnaires in the field. All errors are recorded so that the steps in the process can be completed with greater accuracy in the future.

4. Time Sample Survey Procedures. A complete description of the Time Sampling procedure was outlined in the 1973-74 interim report. Up to that point, two such surveys had been completed and it was evident that revisions were necessary in both the questionnaire format and interviewing procedures. The following paragraphs give details of the system that was used in the remaining five time samples conducted during 1974.

The time sample procedure consisted of a questionnaire developed from the same behavioral objectives used in programming. A multidimensional format was used in which the following questions were a part:

1) What did you do last year (in relation to a given agricultural practice)?
2) What did you do this year (related to same practice)?
3) Have you heard any new information regarding this practice?
4) What was the source of the new information?
5) How do you feel about this practice?

Each questionnaire contained approximately 35 questions that were related to six or seven basic practices that had been broadcast the prior month (see Table 2).

Interviews were conducted with a 20% sample each month from each treatment and control area. The sample was selected randomly from each of the five villages in all treatment sub-areas. There were 25 people interviewed in each of the treatment sub-areas giving a total of 100 people interviewed every month in the whole experimental area where the study was conducted. There were seven time samples conducted in 1974, five of which are included in the list in Table 2. A problem was encountered in that many of the farmers were absent from their farms due to work on the coast so that it was not always possible to interview them at the time their name was chosen for the sub-sample. In some cases they were not available for interviewing in any of the monthly surveys (see Table 3).

Table 2

BASIC VILLAGE EDUCATION

RECOMMENDED PRACTICES MEASURED IN 1974 TIME SAMPLE SURVEYS

TS-3	3	Soil disinfecting
	8	Selection of corn seed
	13	Number of corn seed per hole
	18	Type of fertilizer at seeding
	23	Amount of fertilizer per manzana
	28	How to apply fertilizer
	33	How to measure amount of fertilizer applied by hill dropping
TS-4	3	Use of insecticides
	8	Height of weeds at first weeding
	13	Association of weeding and hilling
	18	Use of weed control
	23	Use of fungicide
	28	How to drain steep land
	33	How to drain flat land
	38	How to drain low land
TS-5	3	Control of insects in beans
	8	Safety precautions with insecticide use
	13	Type of insecticide to control corn ear worm
	18	How to plant second crop/association
	23	How to obtain second crop--sorghum seed
	28	How to obtain second crop--corn seed
TS-6	3	Use of compost piles
	8	Advisor for fertilizers
	18	Type of fertilizer/initiation of flowering corn
	23	Amount of fertilizer per manzana on corn/bean association
	28	Amount of fertilizer per manzana on sorghum/bean association
	33	Proper time to disinfect soil with insecticides
	38	Advisor to identify crop diseases
	13	Timing of fertilizer at initiation of flowering
TS-7	3	First weeding of the corn field/determined by weed height
	8	Second weeding of the corn field/determined by weed height
	13	Order in which you should weed, hill and fertilize
	18	Order in which you should weed and hill your first crop of corn
	23	Insecticide most effective for the diabrotica beetle
	28	How to mix the insecticides used to control the diabrotica beetle
	33	Advisor about use of insecticides on the crops

Table 3

BASIC VILLAGE EDUCATION

SUMMARY OF INTERVIEWS IN 1974 TIME SAMPLE SURVEYS

1. Total number of monthly time sample surveys (TS) included in study = 5.

2. Number of practices included in each survey:

1)	TS III	= 7
2)	TS IV	= 8
3)	TS V	= 6
4)	TS VI	= 8
5)	TS VII	= 7
		36 Total Practices

3. Number of respondents chosen for each survey:

1)	Control sub-area	= 25
2)	Radio sub-area	= 25
3)	Radio + monitor sub-area	= 25
4)	Radio + monitor + agronomist	= 25
	Total Respondents	100

4. Total respondents chosen from each sub-area for all five surveys:

1)	Control sub-area	=125
2)	Radio sub-area	=125
3)	Radio + monitor sub-area	=125
4)	Radio + monitor + agronomist	=125

The person selected to do the interviewing was chosen because of his prior experience in survey research, his knowledge of the area, and his rapport with the people. The interviewing procedures for the time sample were pretested and determined to be most effectively carried out in the following way: After the sample was selected and a list of names was available, the interviewer went to the farm of the person to be interviewed. Upon arrival he began with an informal conversation in which he presented himself and gave the reason for the visit. After the conversation had proceeded informally he then asked specific questions and filled in the questionnaire.

The data from the questionnaires was field checked, transferred to sense sheets and then to computer cards for standard data analysis. A test of the difference of means was used to compare the effect of different communication treatments on changes in knowledge, attitudes and practices.

Further modifications were made in the time sampling procedures at the time they were reinitiated in March, 1975. As of July 1, three time sample surveys have been completed in each of the three areas of Oriente.*

5. The data is analyzed at the North Florida Computer Center in Gainesville under the supervision of Dr. Richard Anderson. The output includes: 1) frequency distribution of all answers to all items on the questionnaires; 2) a breakdown of all answers by major area and treatment sub-area; 3) a test for significant difference between the treatment sub-areas on each item; and 4) the mean, mode, median and standard deviation for each item.

   In addition special computer runs are made when needed to obtain: 1) correlation between items; 2) average yields; 3) village characteristics; 4) characteristics of missing cases that have dropped out of original sample; 5) scoring and scaling to measure change; 6) characteristics of responses by interviewer; and 7) cumulative responses of treatment sub-areas over time.

   The possibilities for further analysis are unlimited. A standardized ID system gives a link that can relate a response of an individual to any response that he makes at a later date or to the responses of farmers in his or other areas.

6. Interpretation on Reported Findings. Three copies of each computer run are prepared. One remains with Anderson in Gainesville, one is sent to Tampa, and one is sent to the BVE office in Guatemala

   Special reports such as Radio Use in Occidente (Evaluation Report #6) are prepared immediately and sent to the field for use. As soon as possible, a summary of all of the responses for each of the major area is prepared and printed (see Evaluation Reports #32, 33, 34). The outstanding characteristics of each area are then selected and prepared in narrative or graphic form and bound along with the data summaries for wider distribution in the working papers.

   The large volume of materials that were listed at the beginning of this section are a result of all of the evaluation activities that start with the development of an evaluation research design and follow through to interpretation and reporting.

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*No time sample surveys have been completed in Occidente due to the delays in program initiation.

III. PERSONNEL

The formal evaluation activities were carried on during the contract year from October 1, 1974 to September 30, 1975 by the following personnel.

At U.S.F. Tampa

1. The Director dedicated one-fifth of his time during the fall months, 30% from January to June and full-time during the summer.

2. The Co-Director dedicated one-third time during the fall months, two-third's from January to June and full-time during the summer.

3. One Graduate Assistant worked during the fall and three additional assistants from January through the summer.

4. A Secretary worked two-third's time all year.

The actual and projected man-months for the Tampa-based personnel for the contract year October 1, 1974 to September 30, 1975 are as follows:

Dr. T. A. Rich, Project Director	4.6	MM
Dr. E. G. Nesman, Project Co-Director	8.8	MM
Mrs. Joan Sheppard, Secretary	8.6	MM
Miss Sandra Kellaher, Research Assistant	6.4	MM
Mrs. Casma Henlon, Research Assistant	1.1	MM
Mrs. Sally (Green) Rivers, Research Assistant	3.7	MM
Mr. Ricardo Strull, Graduate Assistant	0.6	MM
Mr. Peyton Mason, Graduate Assistant	0.8	MM
Total Man Months	34.6	

The original plan called for a full-time research assistant for 12 months but due to delays in contract signing we were unable to secure a person for the job. The contract delays seriously hampered the fall work schedule and the lost time has not been fully recovered.

In addition to the Tampa-based personnel, the evaluation staff depends heavily on the assistance of others that are not on our contract.

On Separate Contract

1. Terzuola as Field Supervisor for data gathering in Oriente.
2. Straub as Field Supervisor for data gathering in the Occidente.
3. Personnel and transportation for interviewing and data processing, furnished by field office.
4. Anderson for data processing at Gainesville.
5. Ray and field staff for advice and field information.

IV. EVALUATION PROSPECTS 1975-76

The plans for the coming year are related to the original goals of the project that include the measurement of the impact of various communication treatments in two diverse cultural settings. The plans are stated below for Oriente, Occidente and cross-cultural comparison.

A. Oriente. The Evaluation Component will gather and analyze data from the three geographical areas of Oriente in much the same fashion as in the year ending. These three areas include three experimental treatment areas in Quezada (R, RM, RMA) three experimental treatment areas in Yupi (R, RM, RMA) and a combined treatment area in Ipala (CM). The Ipala area was divided in two parts during this past year but the pure control area will merge with the monitor control to receive the educational program.

B. Occidente. (See Amendment pp. i-iv). The Evaluation Component will gather and analyze data for the two geographic areas of Occidente in much the same form as was planned for the year just ending. These two areas include three experimental treatment (R, RM, RMA) areas in Momos and two control areas in Chichi (C+CM).

In the absence of programming, all five of the sub-areas of Occidente will be considered as program free control areas for the 1975 year. Due to the delay in programming it is assumed that experimental treatments originally proposed for 1975 will be carried out in 1976.

C. Cross-Cultural Comparison. During the coming year, the analysis of cross-cultural differences will be initiated. This will be in addition to the standard analysis described in the previous section. The original design called for a comparison of Oriente (using Yupi R, RM, RMA and Ipala C, CM) with Occidente (using Momos R, RM, RMA and Chichi C, CM) at the same point in time. The modified plan calls for a year's difference in the application of a comparable design so that any changes in weather and market conditions will have to be considered.

D. Field Interviews and Data Processing.

1. September - November 1975 - Year-End Survey
2. January 1976 - Total 1975 Crop Production Survey
3. March to September - Seven monthly time sample surveys

The above plan is based on the following field operations and support:

1. Continued and constant level of program inputs in radio message as well as monitor and agronomist performance.
2. Personnel and supervision for field surveys.
3. Personnel and supervision for field data processing.
4. Materials, supplies and transportation necessary for field surveys.

E. Data Analysis and Reporting. The main emphasis of the Evaluation Component in 1975-76 will be in the measurement and reporting of change as a result of the BVE program. The findings will be reported in the form of Evaluation Reports, Working Papers, Professional Papers, Monthly Reports and the Annual Interim Report. It is also contemplated that the first Practice Manuals will be ready for publication during the year.

F. Personnel and Facilities. In order to carry out the plan of work as outlined above the following Tampa-based personnel are contemplated:

Dr. Thomas A. Rich, Project Director	4 MM
Dr. Edgar G. Nesman, Project Co-Director	8 MM
Mrs. Joan Sheppard, Secretary	8 MM
Clerk-Typist	6 MM
Miss Sandra Kellaher, Research Assistant	10 MM
Graduate Research Assistants as needed	10 MM
Total Man Months	46 MM

It is assumed also that the University will furnish:

1. Office space (as overhead contribution): Office space for six workers.
2. Office equipment (on renral basis): typewriters, dictaphone, calculator.
3. Data Processing Services (on a fee basis).
4. Printing and Binding Services (on a fee basis).
5. Finance and Accounting Services (as overhead contribution).
6. Grant Contract Renewal Services (as overhead contribution).
7. Release-Time Replacements.

It is also assumed that the collaboration with Dr. Richard Anderson and the North Florida Data Center will continue.

APPENDIX I

RESULTS OF THE 1974

BASIC VILLAGE EDUCATION PROGRAM IN JUTIAPA, GUATEMALA

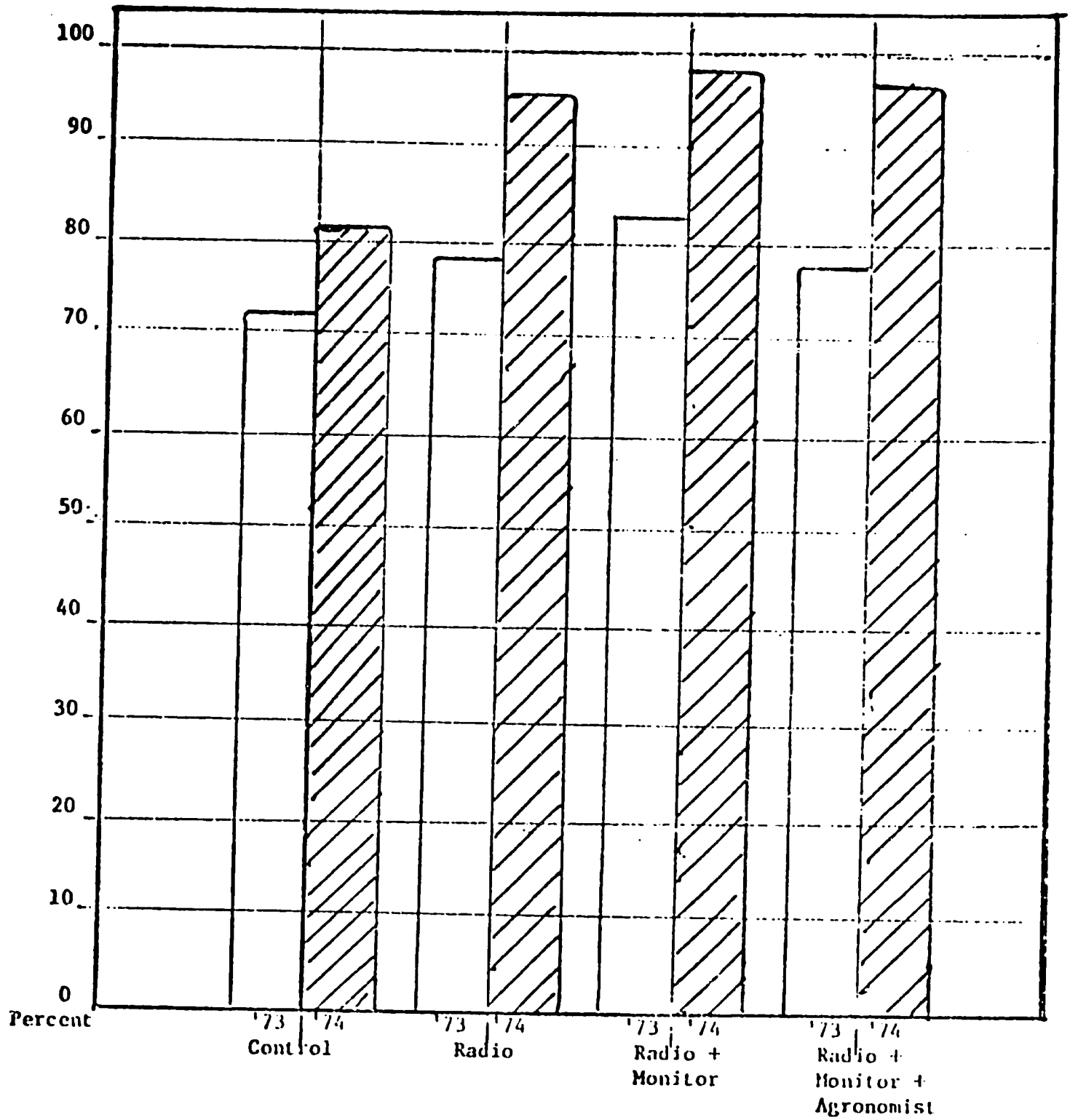
This series of graphs and tables has been prepared from the 1973 baseline survey and the 1974 year-end survey. The same farmers were interviewed in the two surveys except for a small number that were not available at the end of the year.

Some changes were made in the wording of some questions at the time of the year-end survey to eliminate misunderstandings. These changes must be taken into account as the results are compared.

There are 34 graphs and accompanying tables in this report. They are grouped in the following order:

This is a preliminary report and no attempt is made here to explain the findings.

RADIO LISTENING: PERCENT THAT LISTEN DAILY

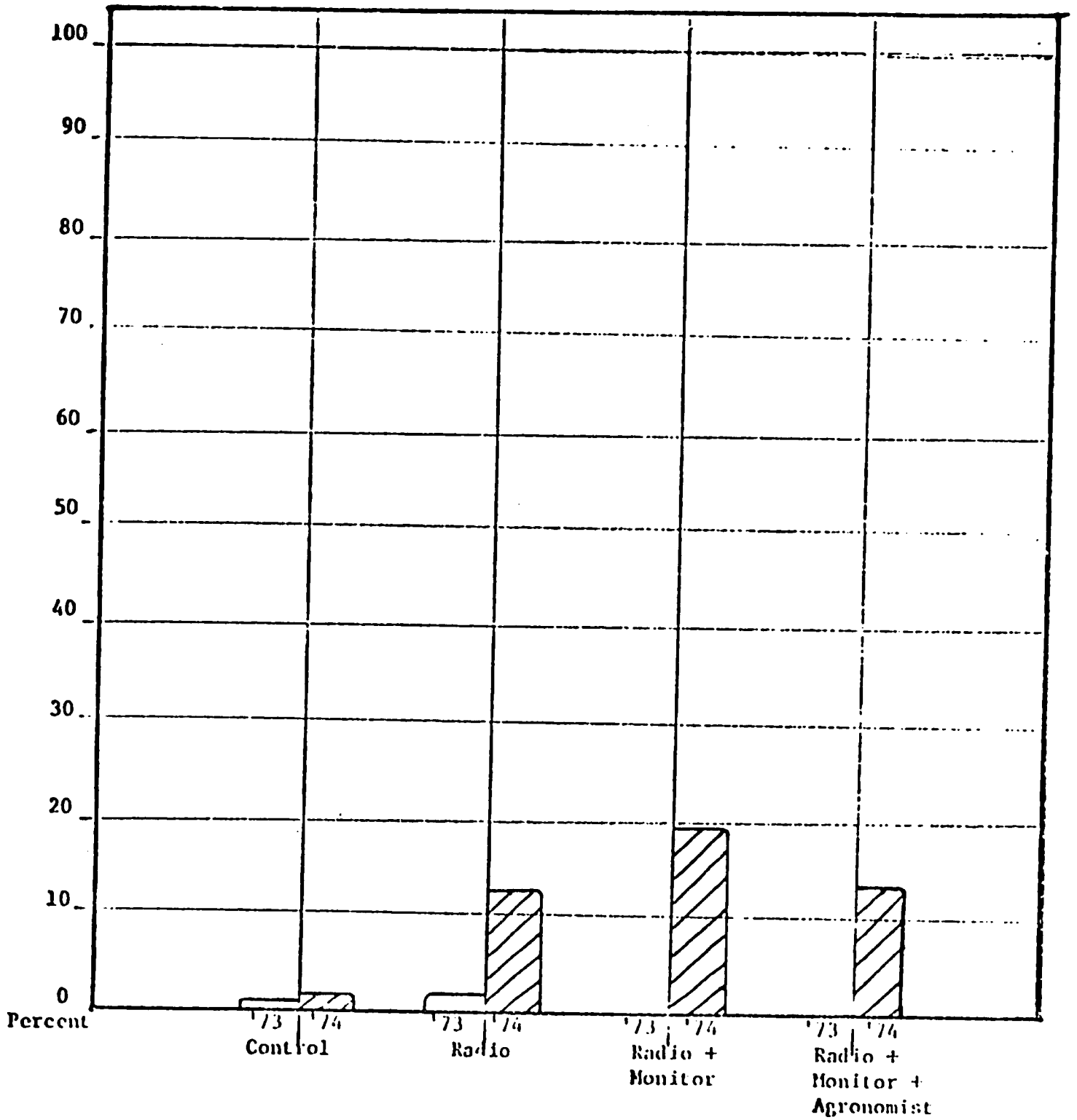


	Control	Radio	Radio + Monitor	Radio + Monitor + Agronomist
1973 (Q.83)	71.3	77.2	83.0	78.3
1974 (Q.210)	80.7	94.6	97.2	96.6

Source: Baseline Survey 1973 and Year-End Survey 1974

RECENT CHANGES IN PLANTING METHODS:

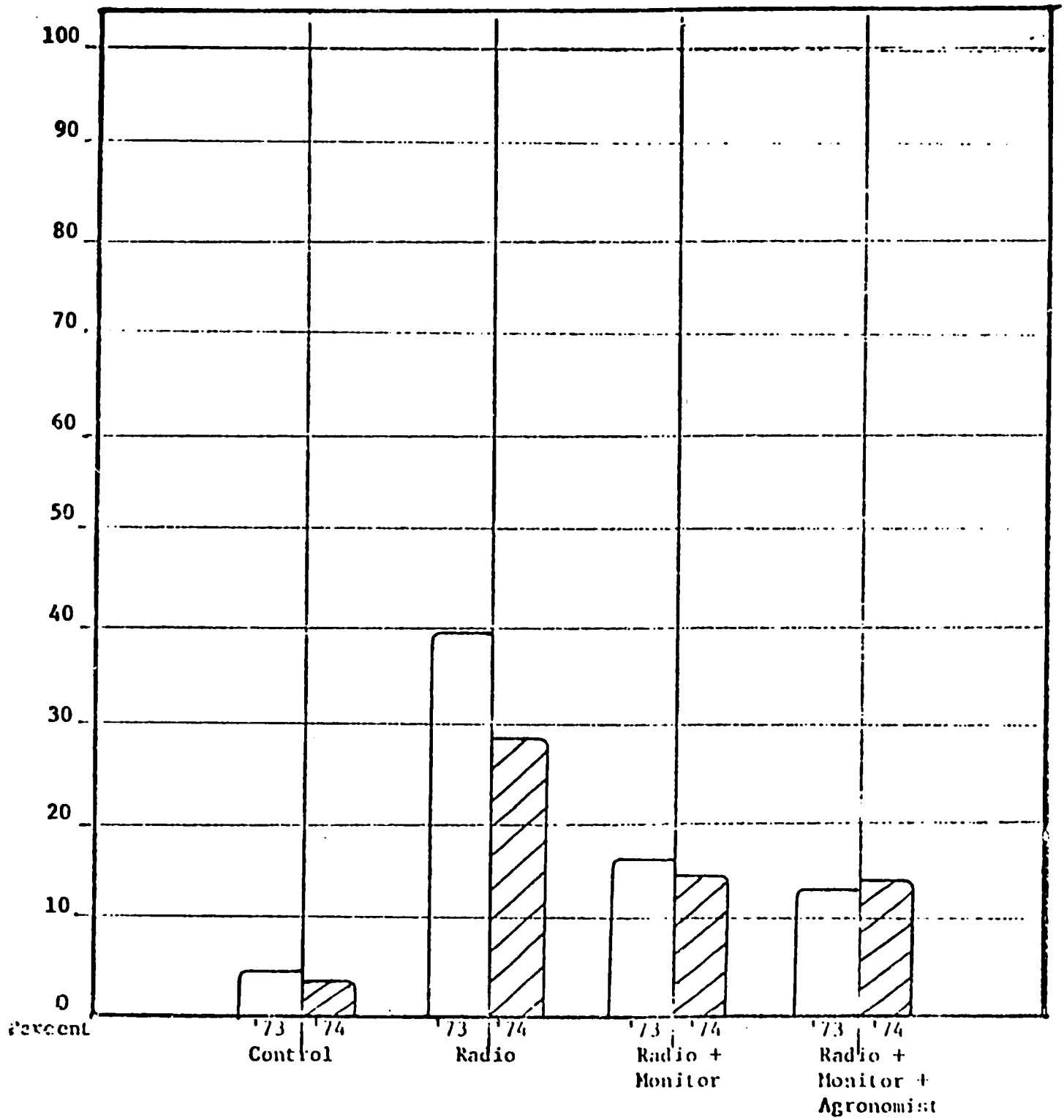
PERCENT OF FARMERS REPORTING RADIO AS THE SOURCE OF INFORMATION



	Control	Radio	Radio + Monitor	Radio + Monitor + Agronomist
1973 (Q.40)	0.7	1.7	0.0	0.0
1974 (Q.173)	1.6	12.5	19.3	13.4

Source: Baseline Survey 1973 and Year-End Survey 1974

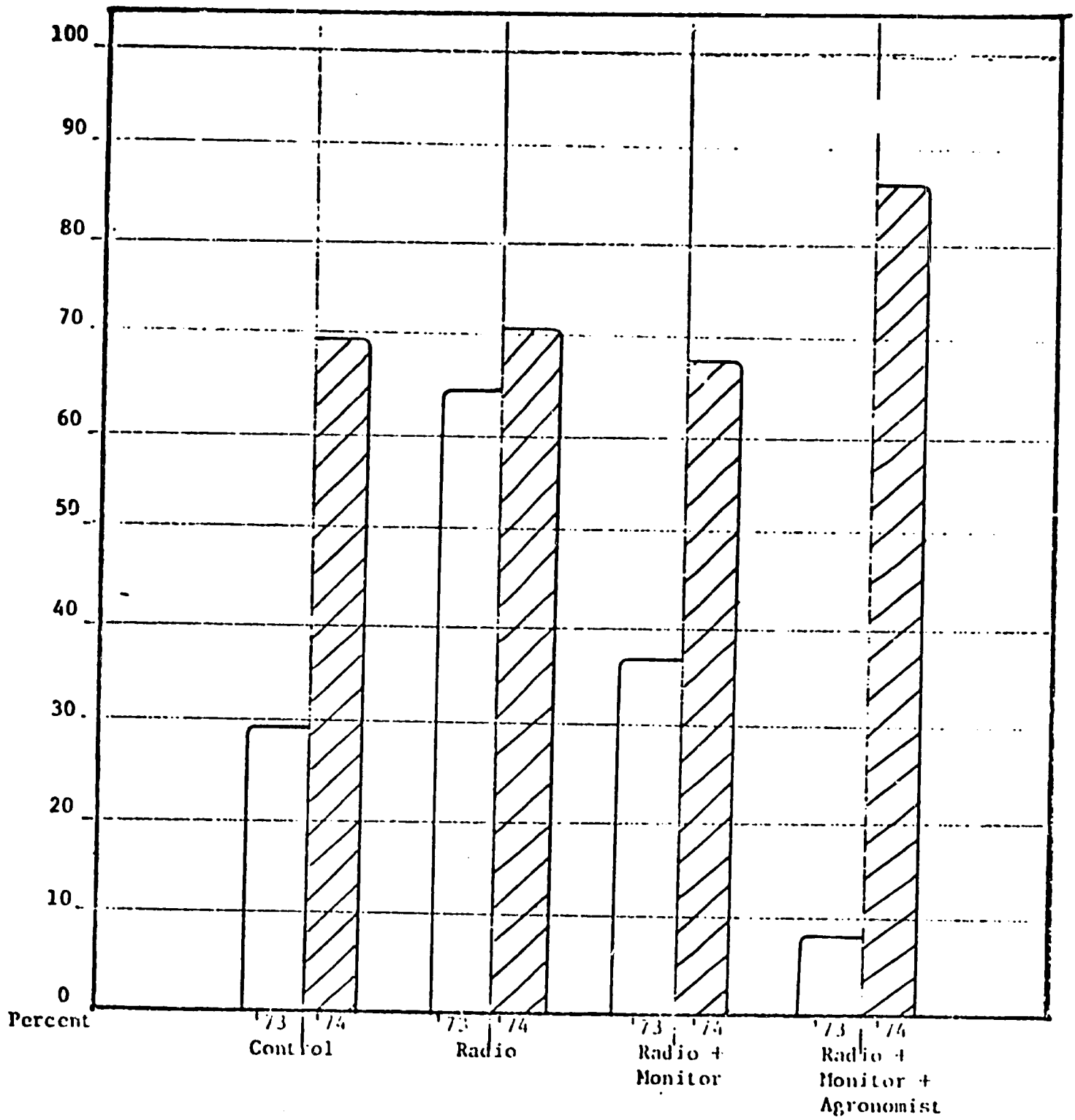
PERCENT OF FARMERS THAT BELONG TO COMMUNITY GROUP



1973 (Q.14)	12.5	39.5	16.1	13.6
1974 (Q.221)	11.6	28.6	14.6	14.3

Source: Baseline Survey 1973 and Year-End Survey 1974

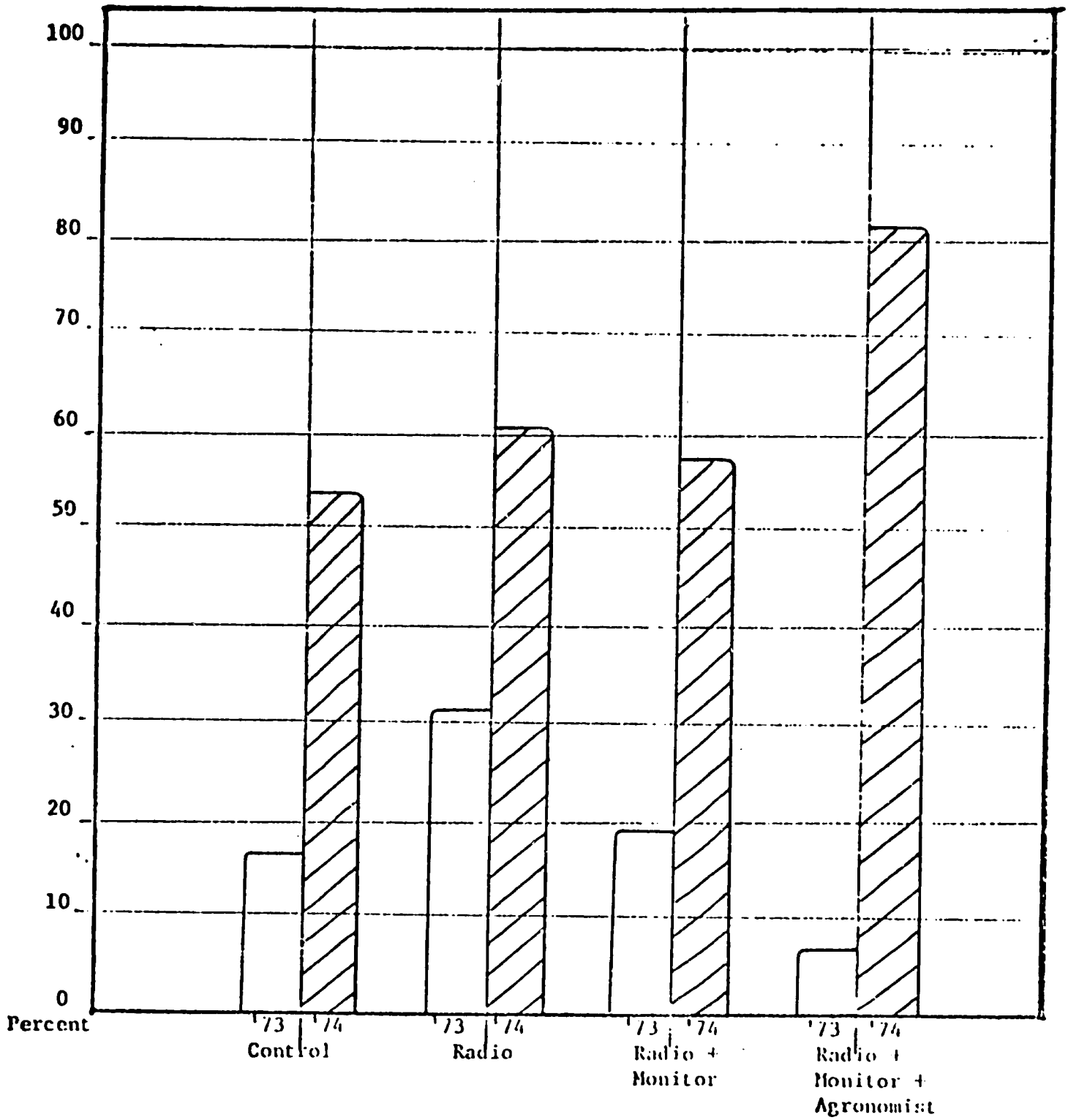
PERCENT OF FARMERS REPORTING COMMUNITY VISIT OF AGRONOMIST



1973 (Q.252)	29.5	64.7	37.0	8.0
1974 (Q.174)	69.0	70.5	68.8	86.5

Source: Baseline Survey 1973 and Year-End Survey 1974

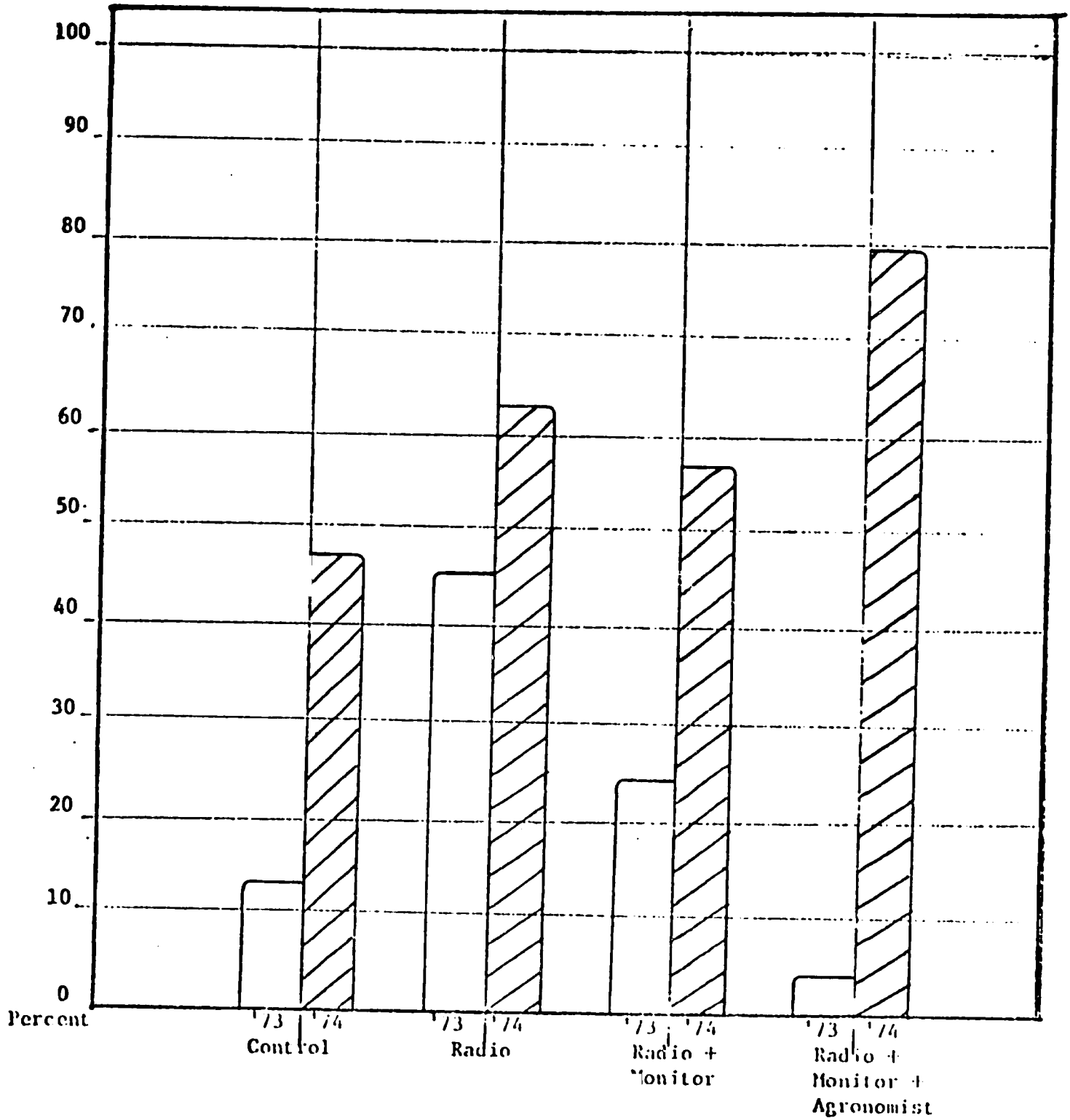
PERCENT OF FARMERS THAT TALKED PERSONALLY WITH AGRONOMIST



1973 (Q.254)	16.7	31.9	19.0	7.2
1974 (Q.175)	53.5	60.7	57.8	81.5

Source: Baseline Survey 1973 and Year-End Survey 1974

PERCENT OF FARMERS FEELING THAT AGRONOMIST'S VISIT WAS HELPFUL

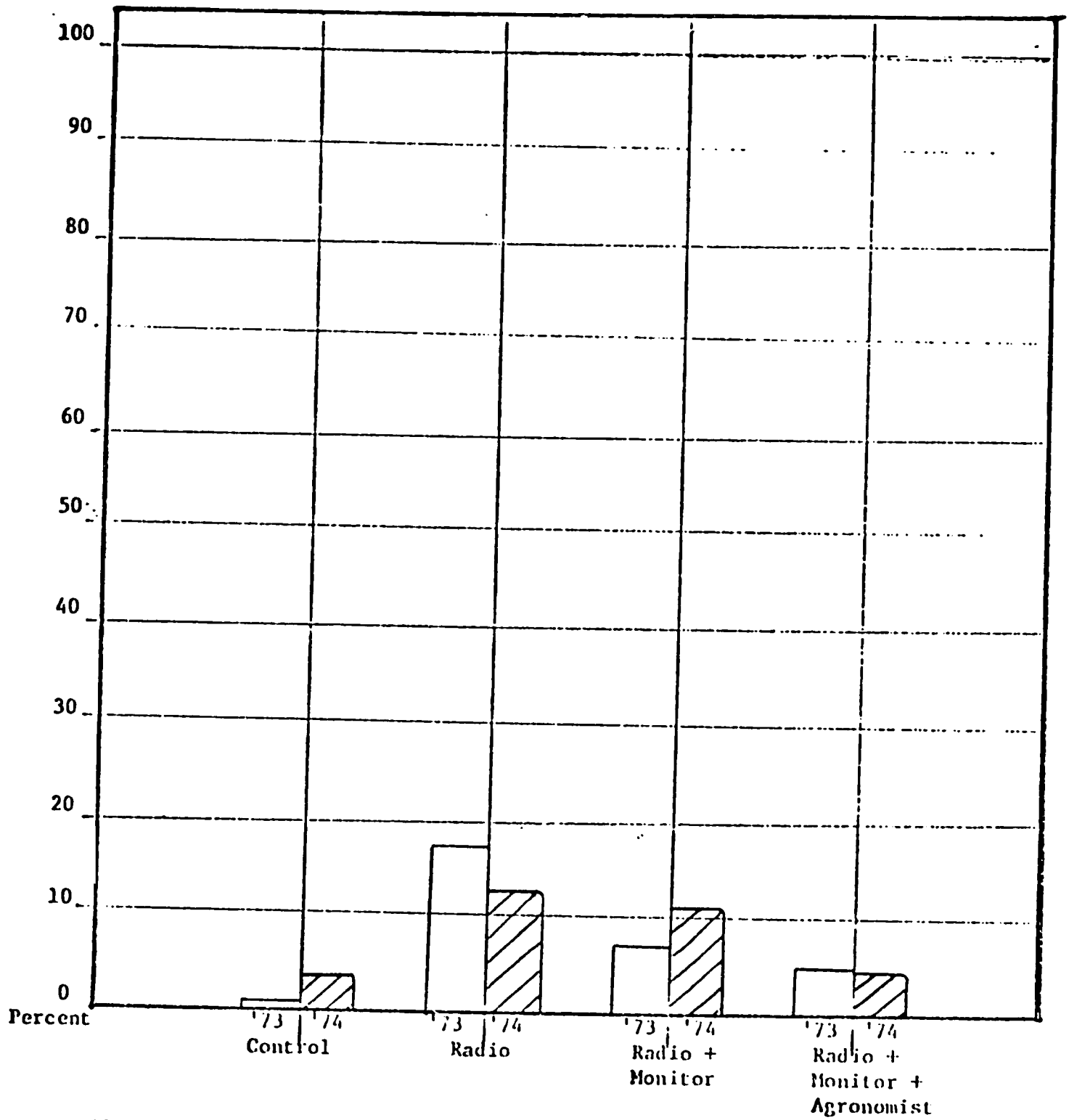


	Control	Radio	Radio + Monitor	Radio + Monitor + Agronomist
1973 (Q.255)	13.6	45.7	24.2	4.0
1974 (Q.176)	47.3	63.4	56.9	79.8

Source: Baseline Survey 1973 and Year-End Survey 1974

RECENT CHANGES IN PLANTING METHODS:

PERCENT OF FARMERS REPORTING AGRONOMIST AS SOURCE OF INFORMATION

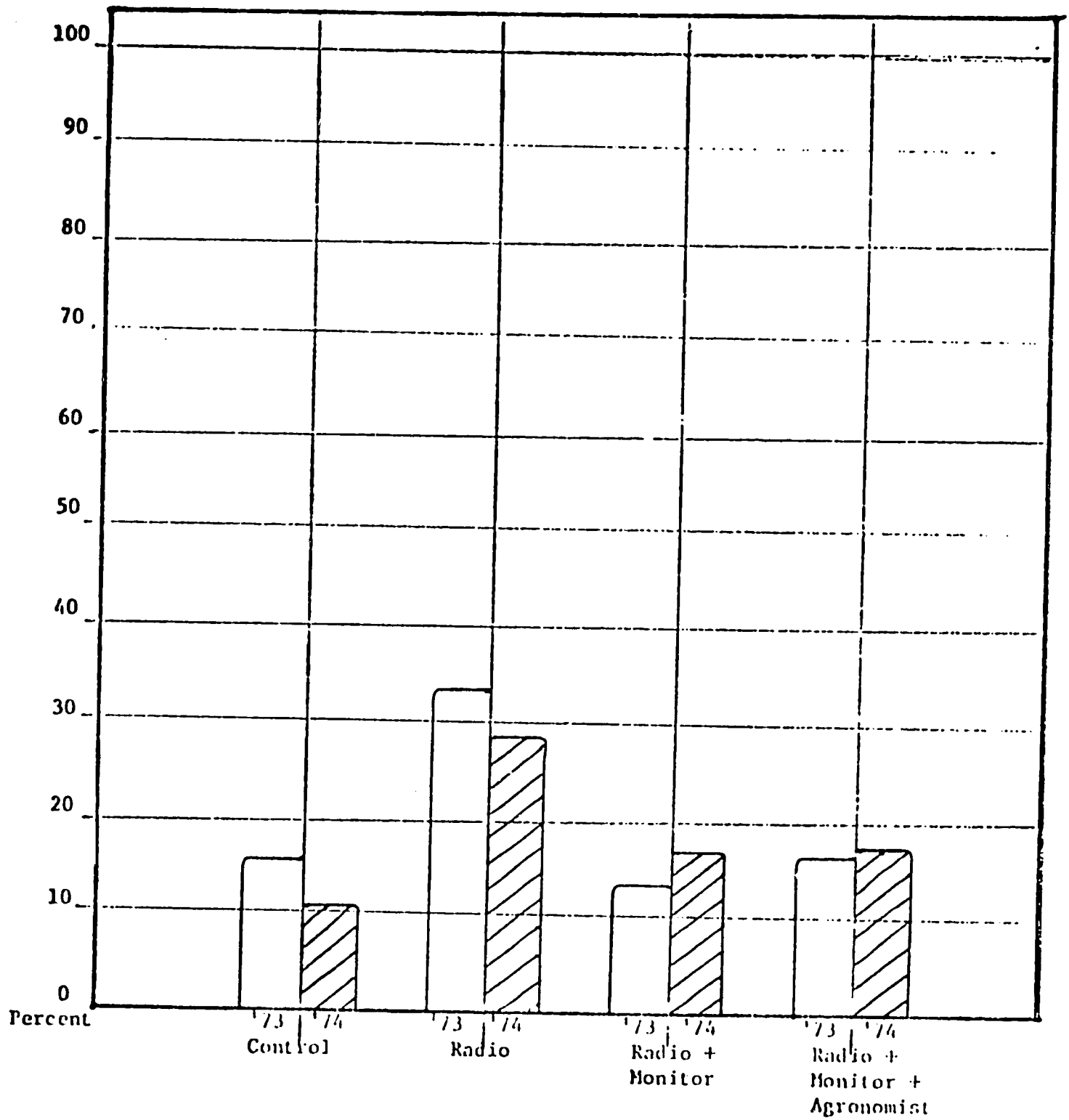


	Control	Radio	Radio + Monitor	Radio + Monitor + Agronomist
1973 (Q.40)	0.7	17.6	6.8	4.5
1974 (Q.73)	3.1	12.5	11.0	4.2

Source: Baseline Survey 1973 and Year-End Survey 1974

CREDIT.USE:

PERCENT OF FARMERS USING CREDIT

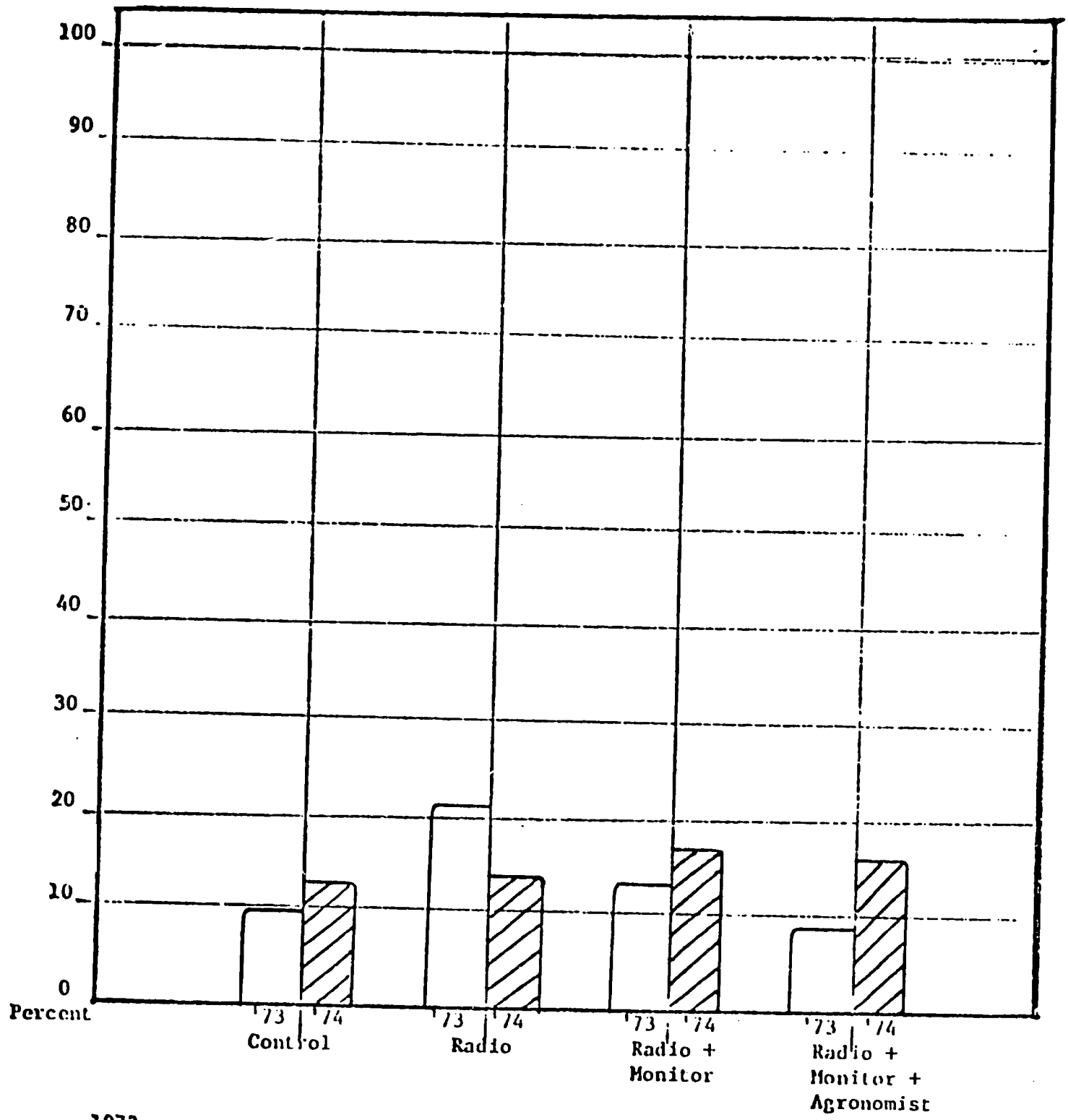


	Control	Radio	Radio + Monitor	Radio + Monitor + Agronomist
1973 (Q.60)	15.4	33.6	13.6	17.3
1974 (Q.169)	10.1	28.6	17.4	17.6

Source: Baseline Survey 1973 and Year-End Survey 1974

CREDIT USE:

PERCENT OF FARMERS FEELING THAT CREDIT IS "EASY" TO OBTAIN

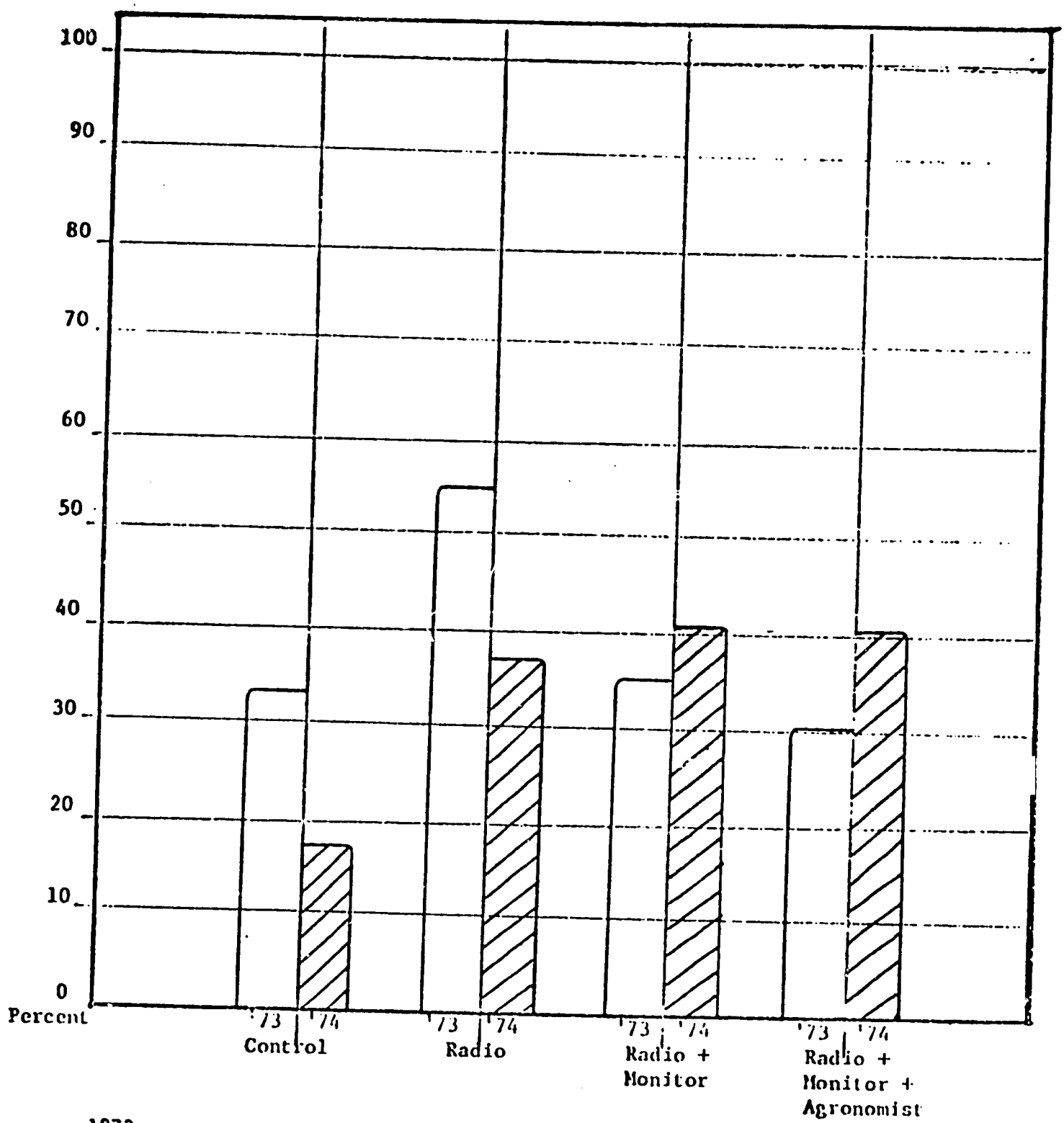


	Control	Radio	Radio + Monitor	Radio + Monitor + Agronomist
1973 (Q.62)	9.6	21.3	12.7	8.3
1974 (Q.170)	12.4	13.4	16.5	16.0

Source: Baseline Survey 1973 and Year-End Survey 1974

RECENT CHANGES IN PLANTING METHODS:

PERCENT OF FARMERS CHANGING



	Control	Radio	Radio + Monitor	Radio + Monitor + Agronomist
1973 (Q.39)	33.1	54.6	35.6	30.1
1974 (Q.172)	17.1	37.5	40.4	40.3

Source: Baseline Survey 1973 and Year-End Survey 1974

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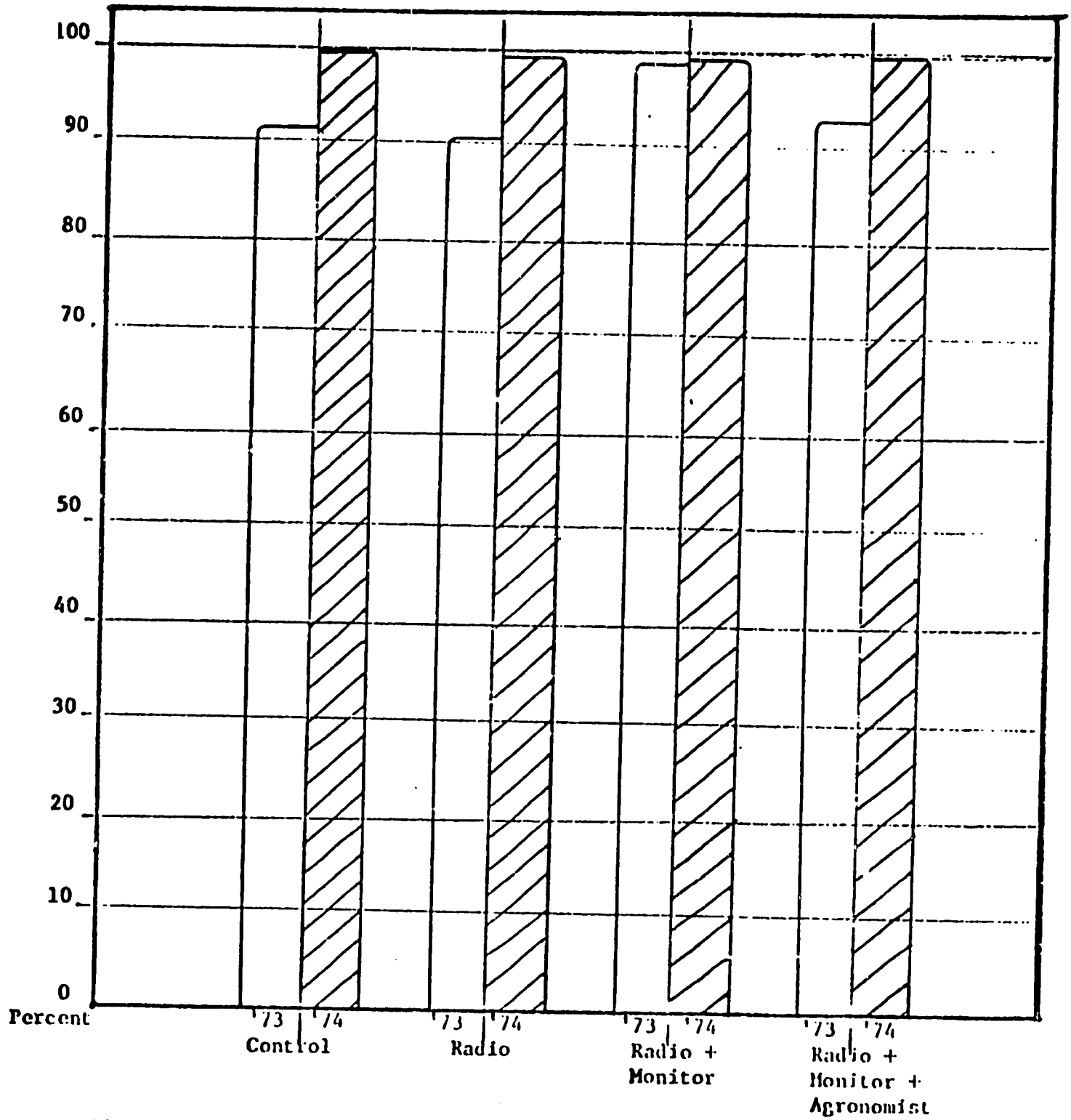
LAND CLEARING:

PERCENT OF FARMERS THAT CLEAN THEIR LAND BEFORE PLANTING

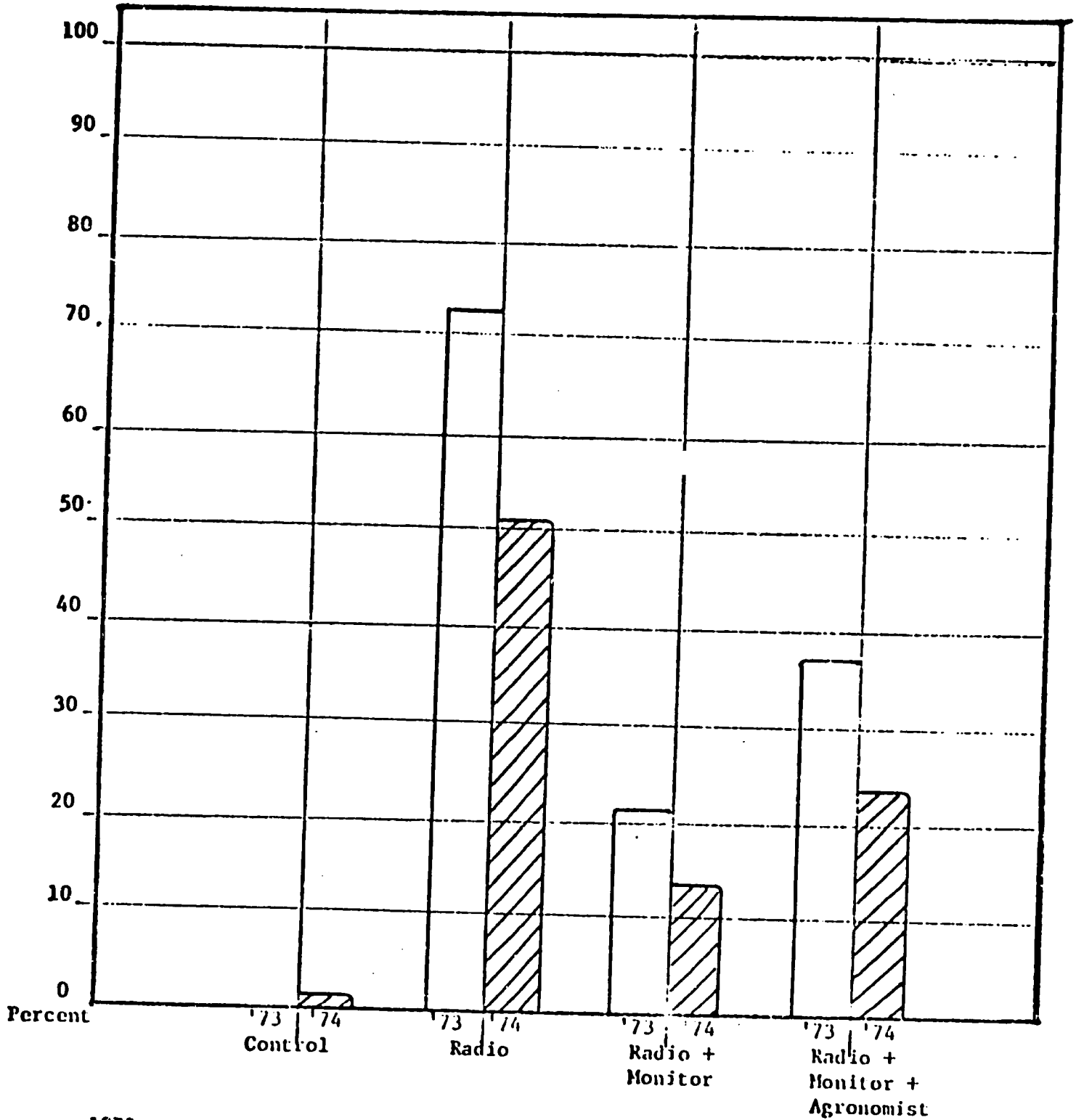


	Control	Radio	Radio + Monitor	Radio + Monitor + Agronomist
1973 (Q.201)	91.7	90.5	98.3	92.8
1974 (Q.15)	99.9	99.1	99.1	99.2

Source: Baseline Survey 1973 and Year-End Survey 1974

SECOND PLANTING;

PERCENT OF FARMERS THAT PLANTED CORN

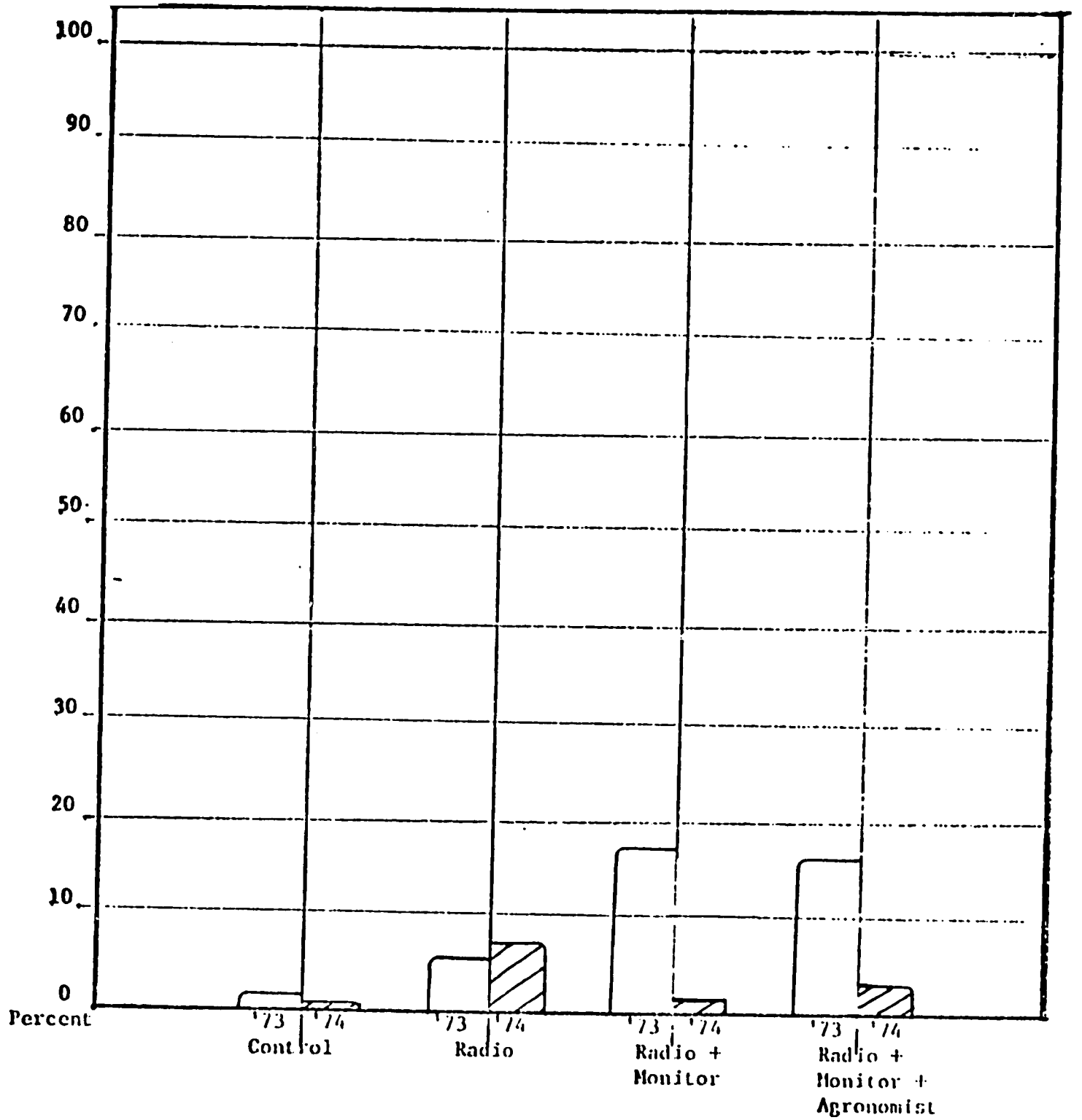


	Control	Radio	Radio + Monitor	Radio + Monitor + Agronomist
1973 (Q.206)	00.0	72.4	21.6	37.6
1974 (Q.72)	01.6	50.9	13.8	23.5

Source: Baseline Survey 1973 and Year-End Survey 1974

CORN SEED TYPE:

PERCENT OF FARMERS USING HYBRID OR CERTIFIED SEED

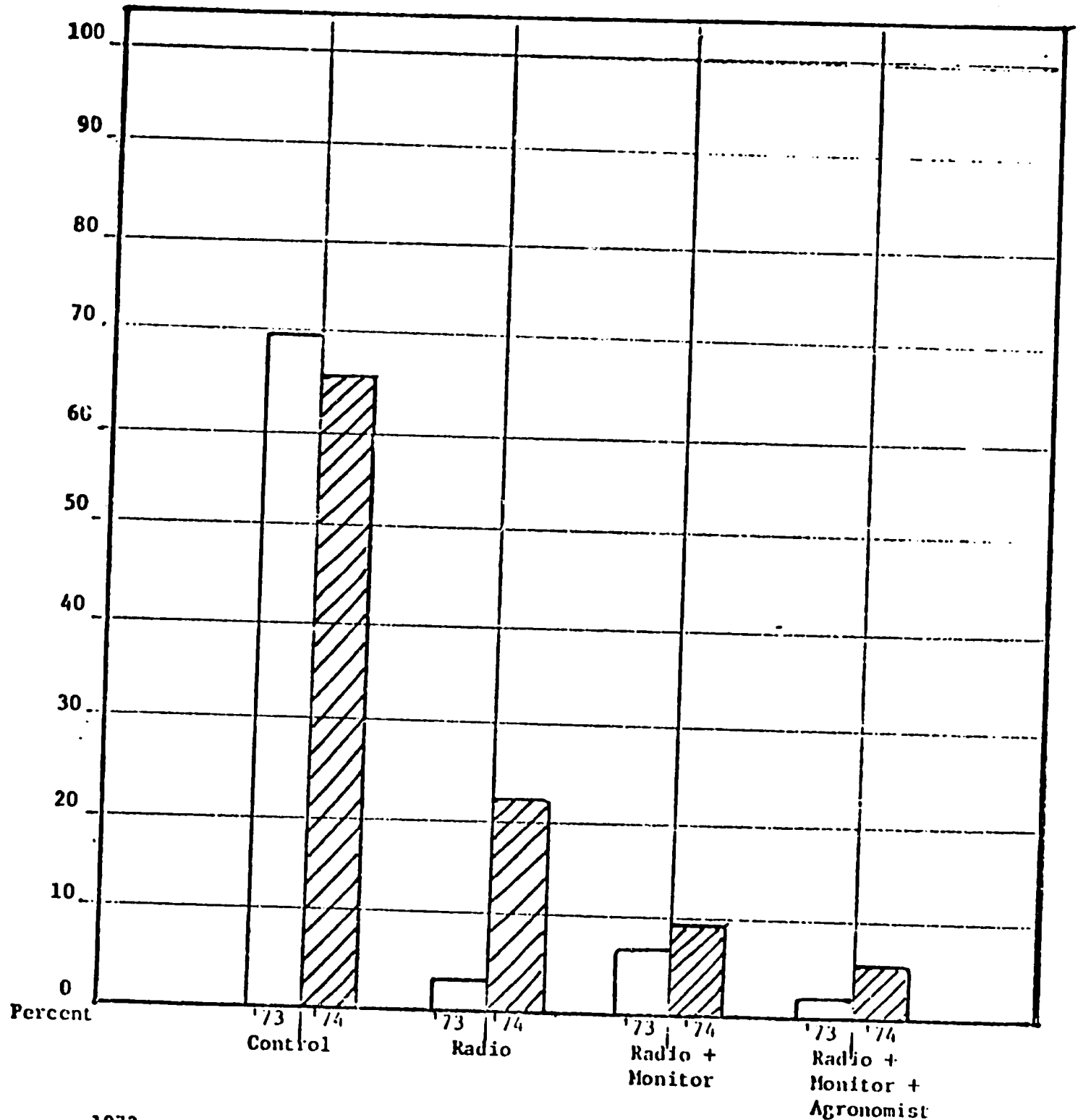


	Control	Radio	Radio + Monitor	Radio + Monitor + Agronomist
1973 (Q.23)	1.4	5.8	17.8	16.5
1974 (Q.26)	0.8	7.2	1.8	3.3

Source: Baseline Survey 1973 and Year-End Survey 1974

SECOND PLANTING:

PERCENT OF FARMERS THAT PLANTED BEANS



	Control	Radio	Radio + Monitor	Radio + Monitor + Agronomist
1973 (Q.206)	69.7	2.6	6.9	1.6
1974 (Q.72)	65.2	22.3	9.3	5.0

Source: Baseline Survey 1973 and Year-End Survey 1974

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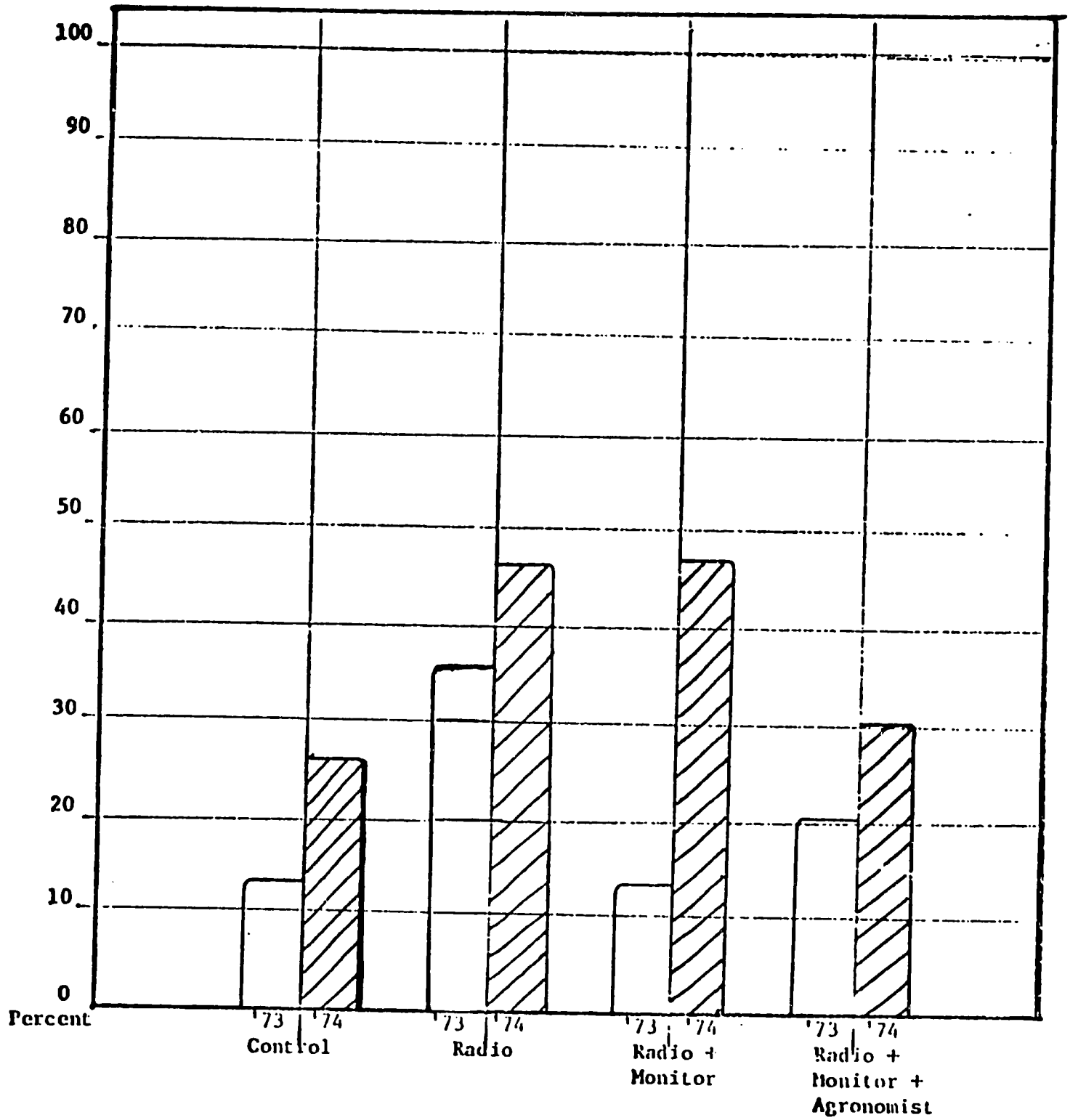
INSECTICIDE USE:

PERCENT OF FARMERS USING ONE OR MORE INSECTICIDES

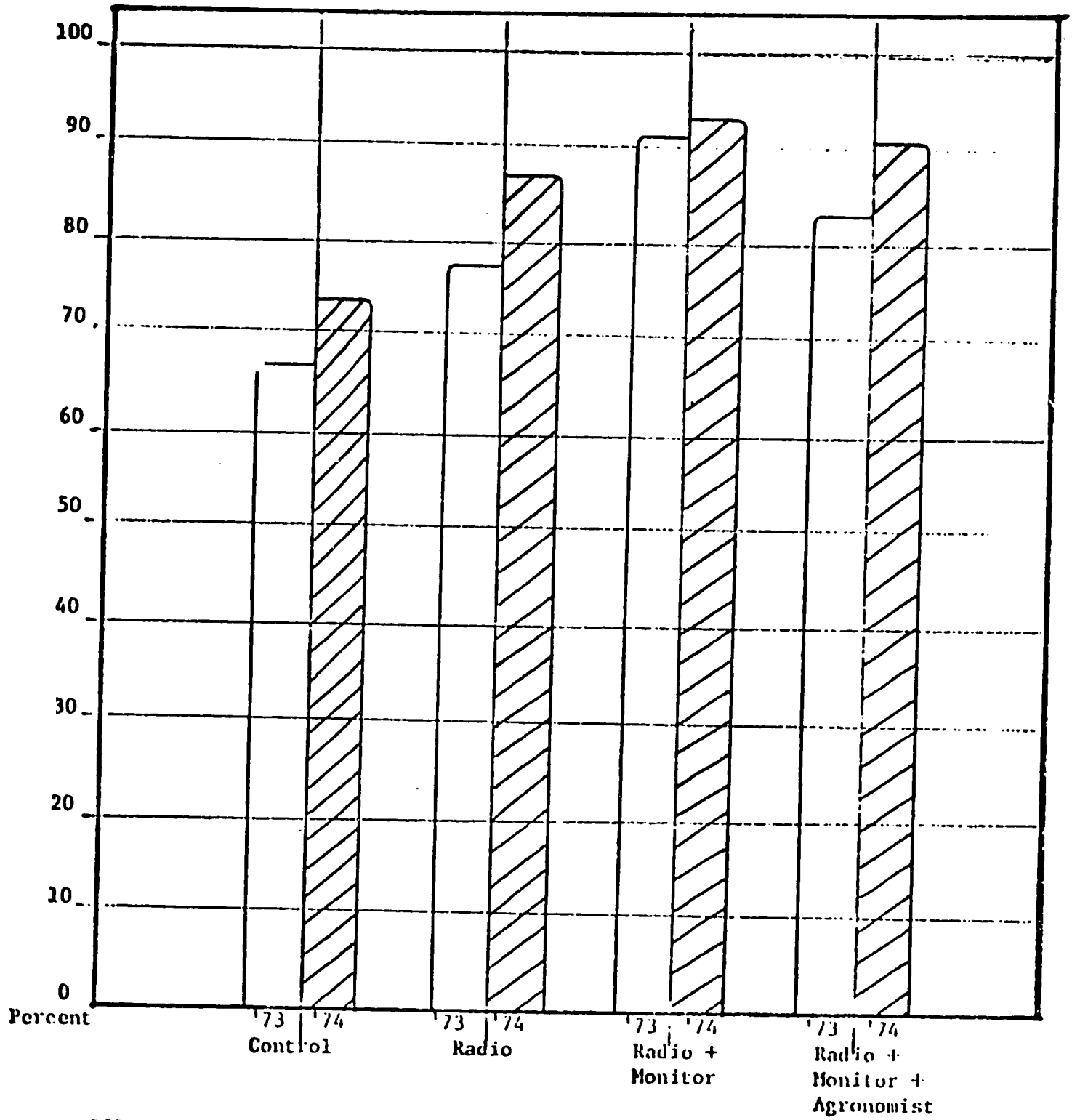


	Control	Radio	Radio + Monitor	Radio + Monitor + Agronomist
1973 (Q.35)	13.2	35.3	6	20.3
1974 (Q.99)	26.4	46.4	7	30.3

Source: Baseline Survey 1973 and Year-End Survey 1974

INSECTICIDE USE:

PERCENT OF FARMERS THAT PERCEIVE NO DANGER IN INSECTICIDE USE



	Control	Radio	Radio + Monitor	Radio + Monitor + Agronomist
1973 (Q.36)	67.6	77.3	91.2	82.8
1974 (Q.101)	73.6	86.6	92.7	90.8

Source: Baseline Survey 1973 and Year-End Survey 1974

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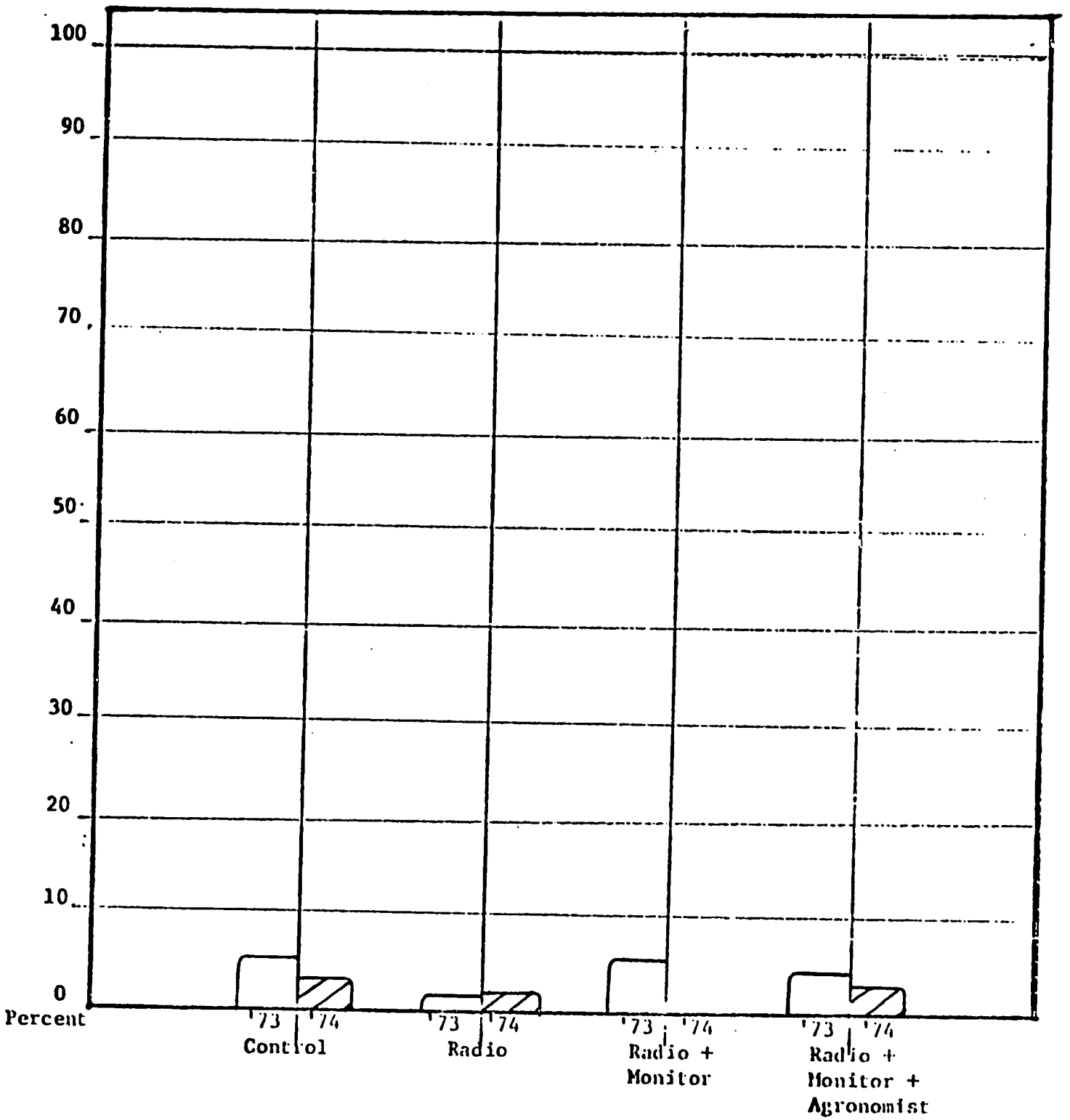
FUNGICIDE USE:

PERCENT OF FARMERS USING FUNGICIDE ON THEIR CROPS



	Control	Radio	Radio + Monitor	Radio + Monitor + Agronomist
1973 (Q.214)	5.4	1.7	5.2	4.0
1974 (Q.139)	3.1	1.8	0.0	2.5

Source: Baseline Survey 1973 and Year-End Survey 1974

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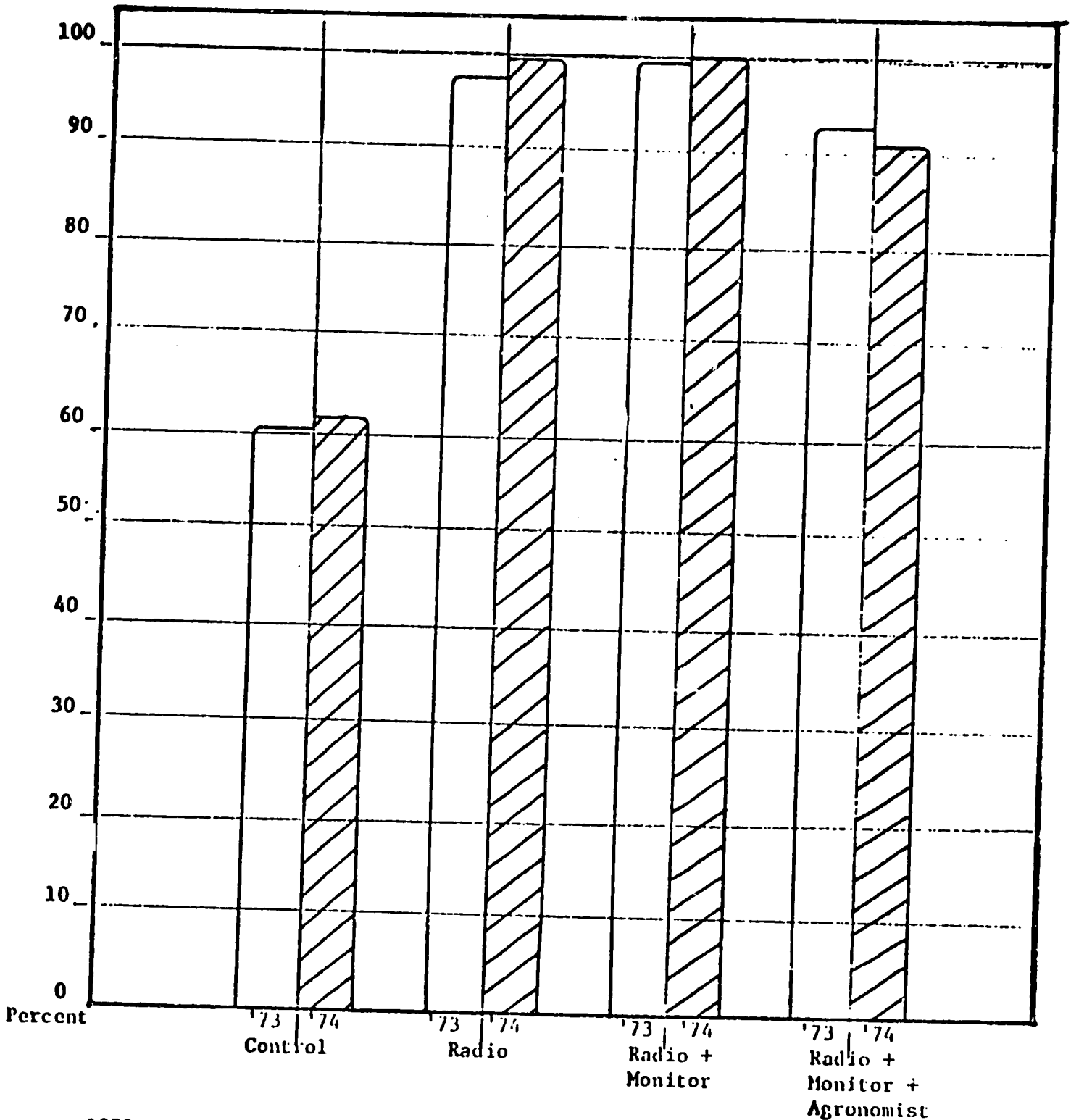
WEED CONTROL:

PERCENT OF FARMERS THAT HILL CORN

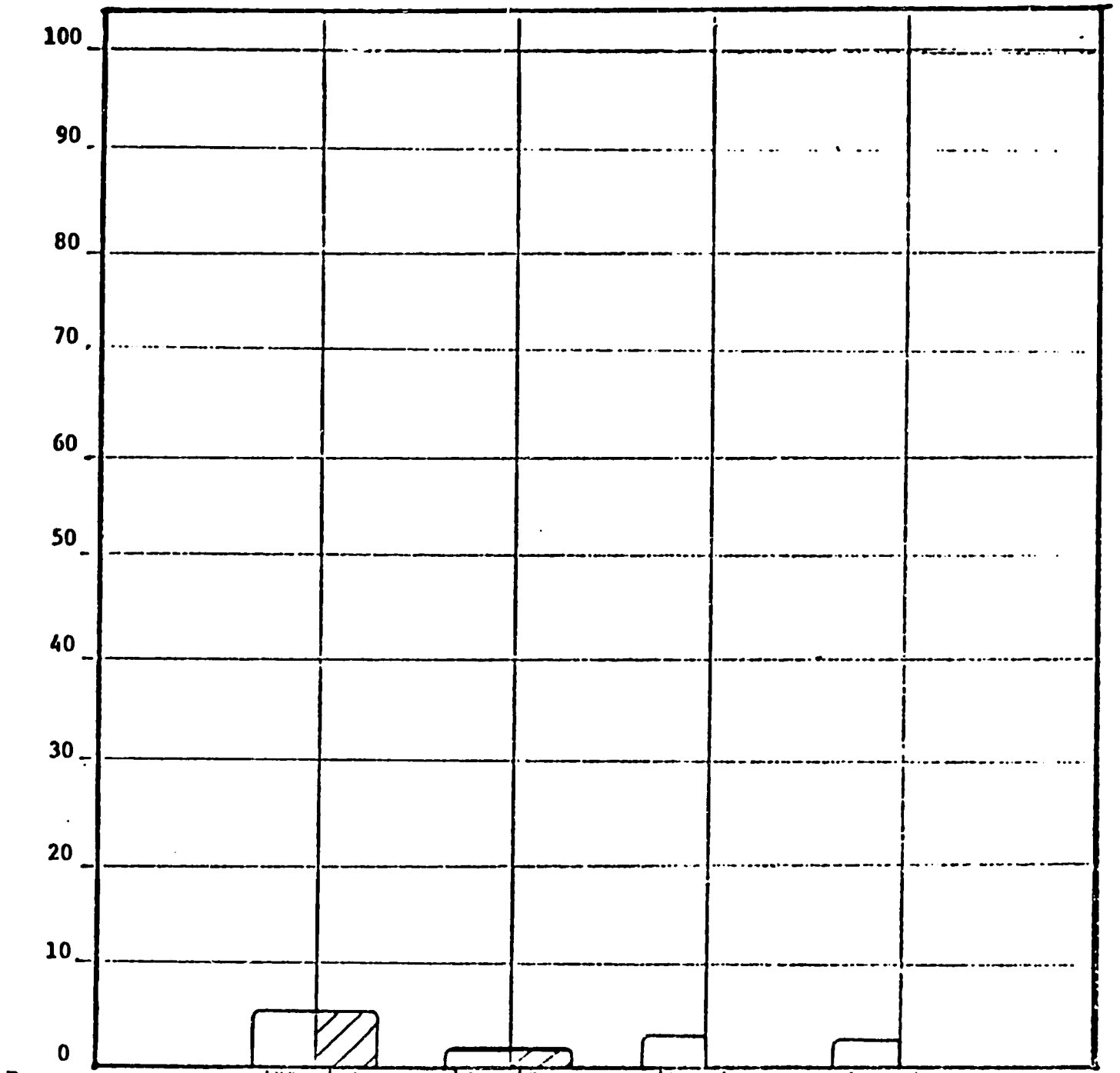


	Control	Radio	Radio + Monitor	Radio + Monitor + Agronomist
1973 (Q.208)	60.6	97.5	99.1	92.8
1974 (Q.131)	62.0	99.1	100.0	90.8

Source: Baseline Survey 1973 and Year-End Survey 1974

WEED CONTROL:

PERCENT OF FARMERS THAT USE CHEMICAL WEED KILLER

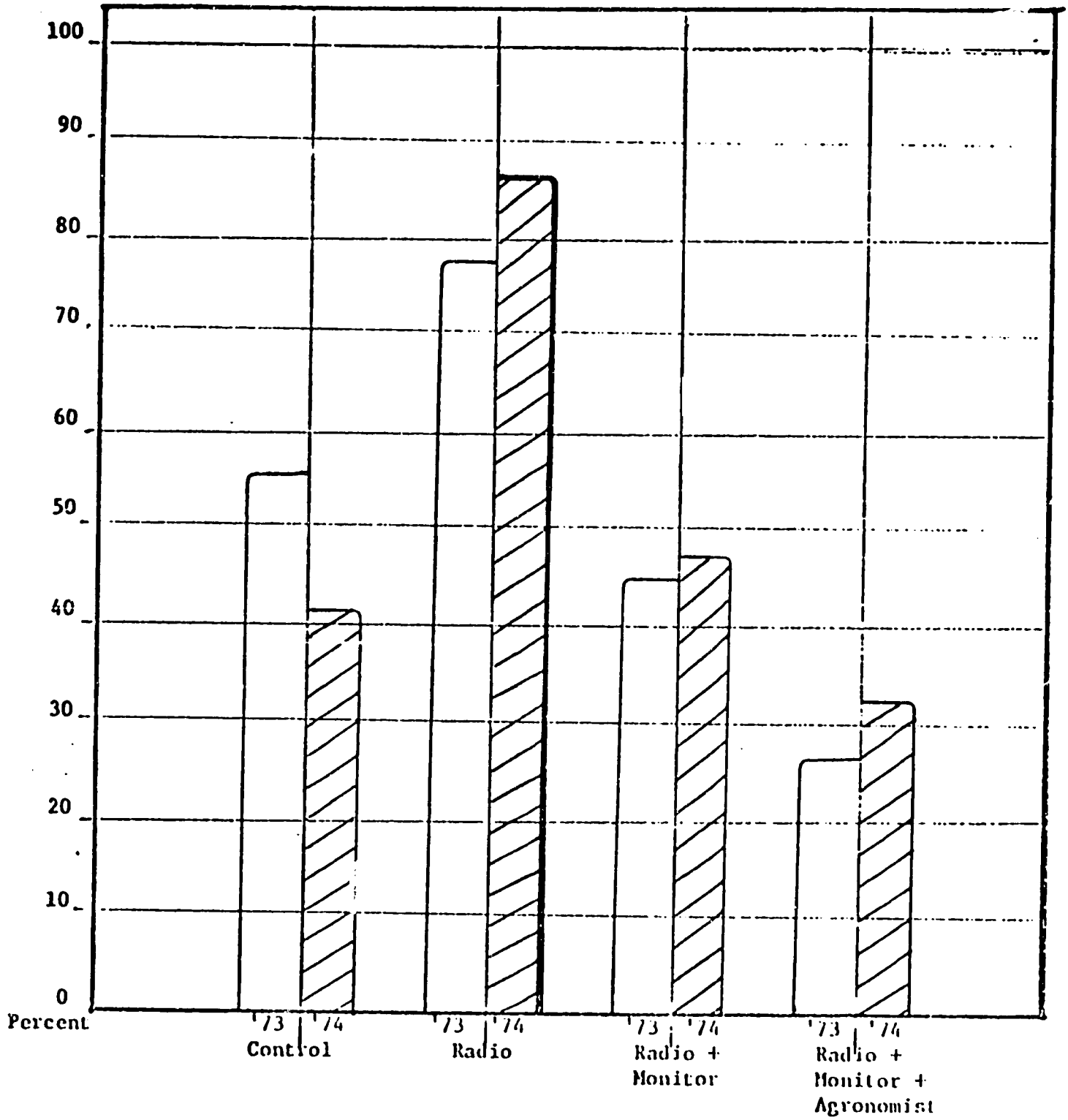


	Control	Radio	Radio + Monitor	Radio + Monitor + Agronomist
1973 (Q.217)	5.4	1.8	2.6	2.4
1974 (Q.134)	5.4	1.8	0.0	0.0

Source: Baseline Survey 1973 and Year-End Survey 1974

FERTILIZER USE:

PERCENT OF FARMERS USING ON CORN (FIRST PLANTING)

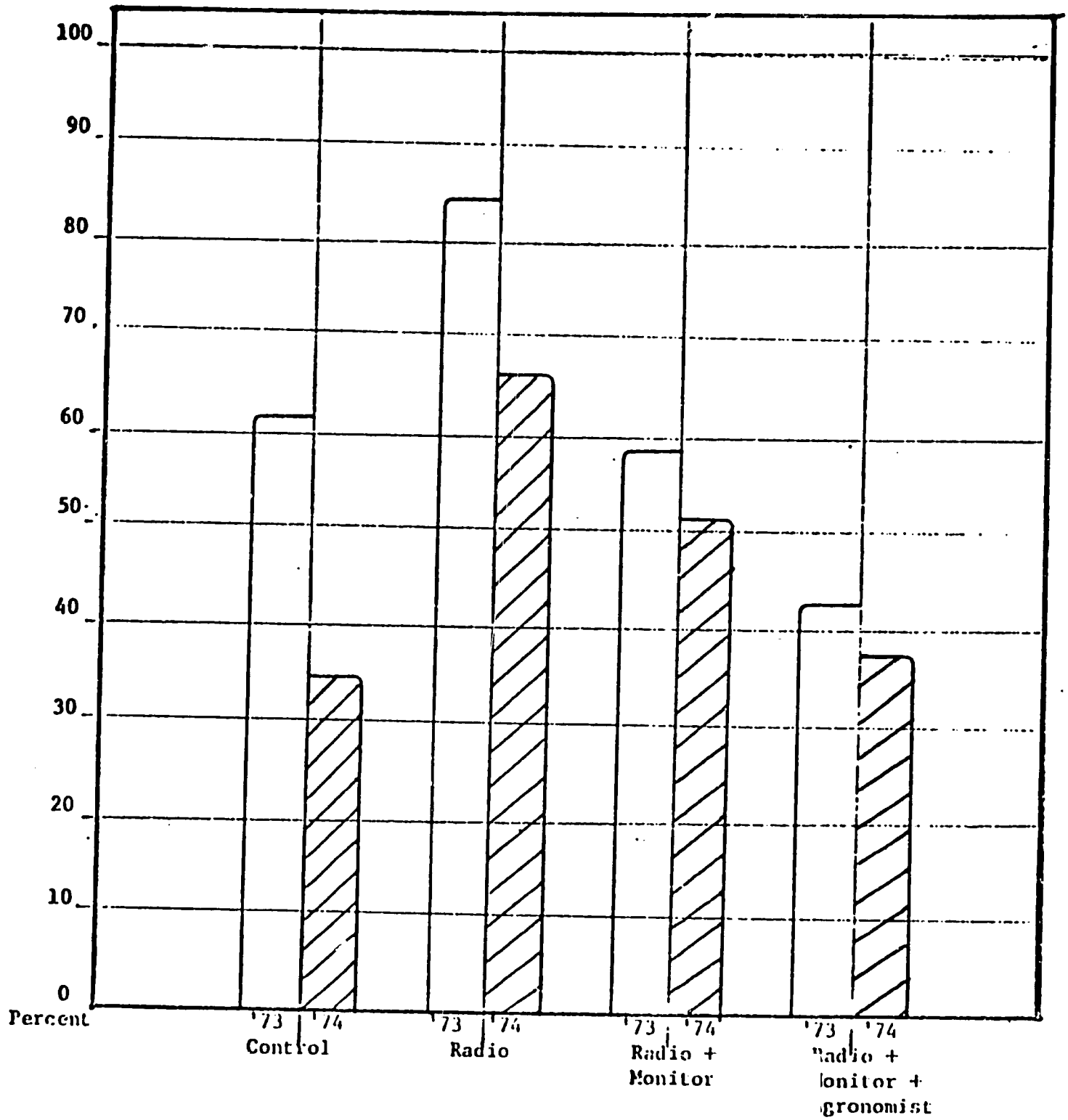


	Control	Radio	Radio + Monitor	Radio + Monitor + Agronomist
1973 (Q.30)	55.9	77.4	45.0	26.4
1974 (Q.111 & 112)	41.1	86.5	47.7	32.7

Source: Baseline Survey 1973 and Year-End Survey 1974

FERTILIZER USE:

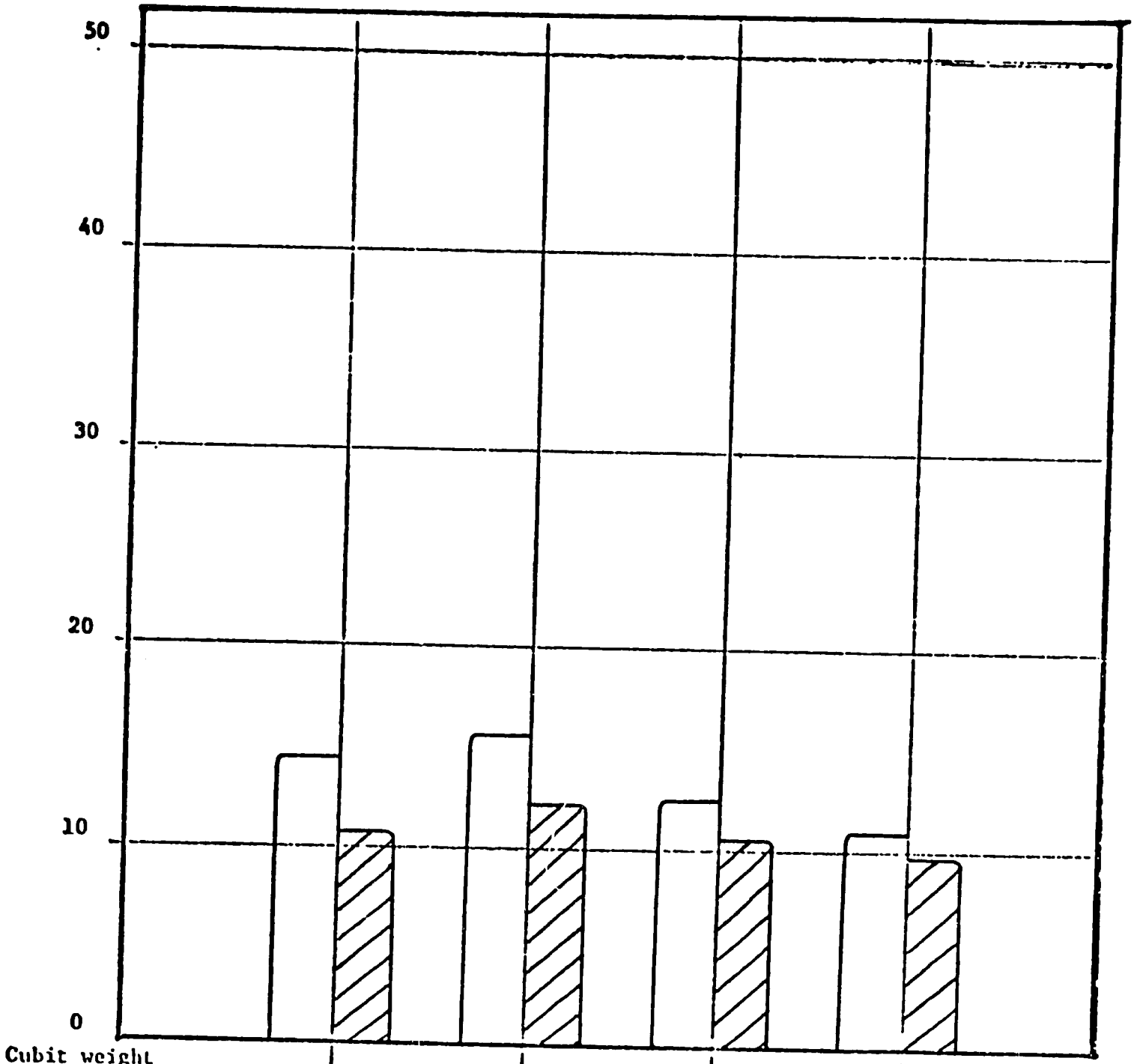
PERCENT OF FARMERS FEELING THAT 3+ CWT/MZA IS IDEAL RATE OF APPLICATION



1973 (Q.32)	61.7	84.9	58.5	42.9
1974 (Q.106)	34.2	66.1	51.4	37.9

Source: Baseline Survey 1973 and Year-End Survey 1974

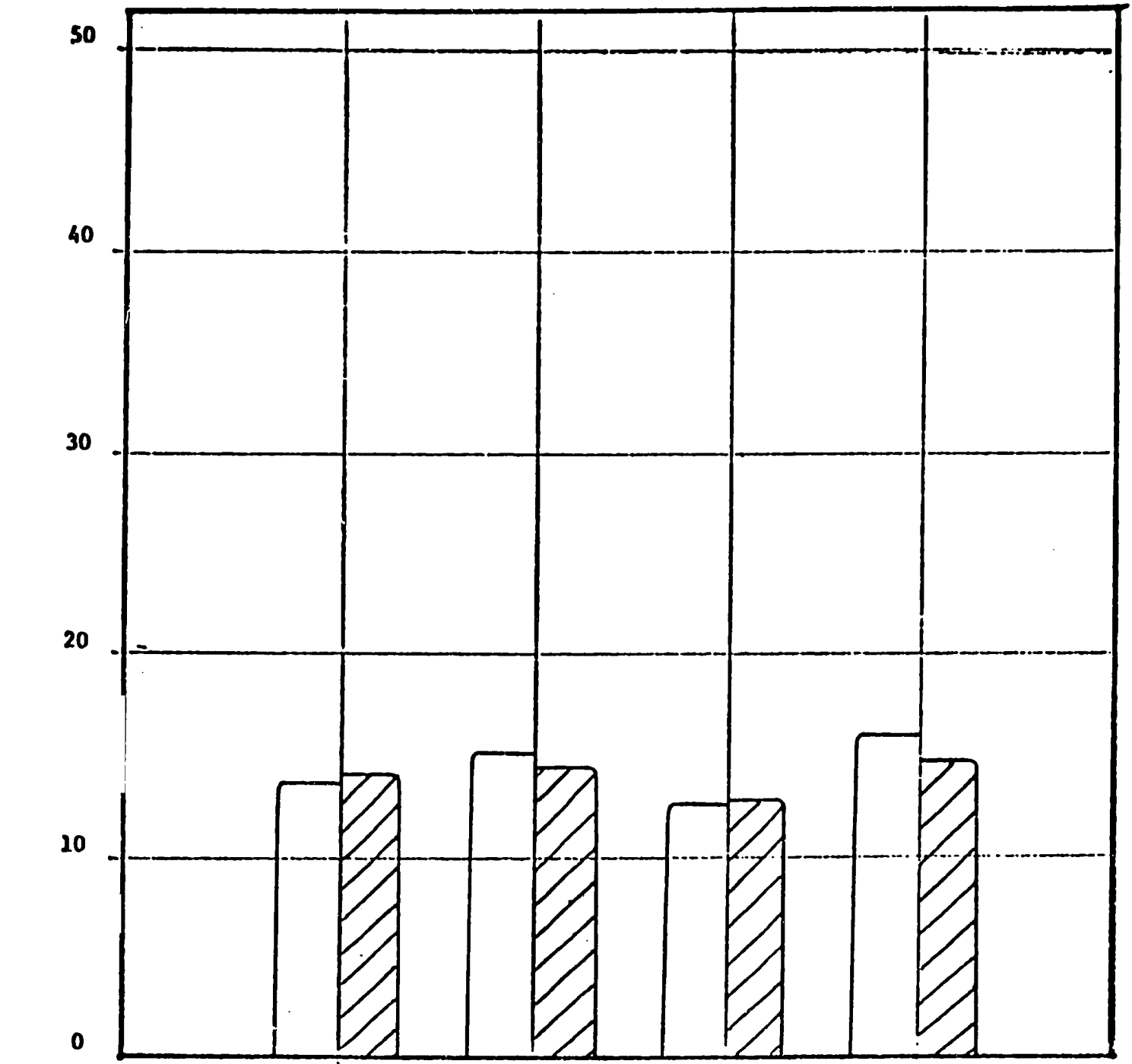
CORN YIELD



	Control	Radio	Radio + Monitor	Radio + Monitor + Agronomist
1973 (Q.219)	14.8	16.0	12.9	11.2
1974 (Q.45)	10.8	12.4	10.9	9.8

Source: Baseline Survey 1973 and Year-End Survey 1974

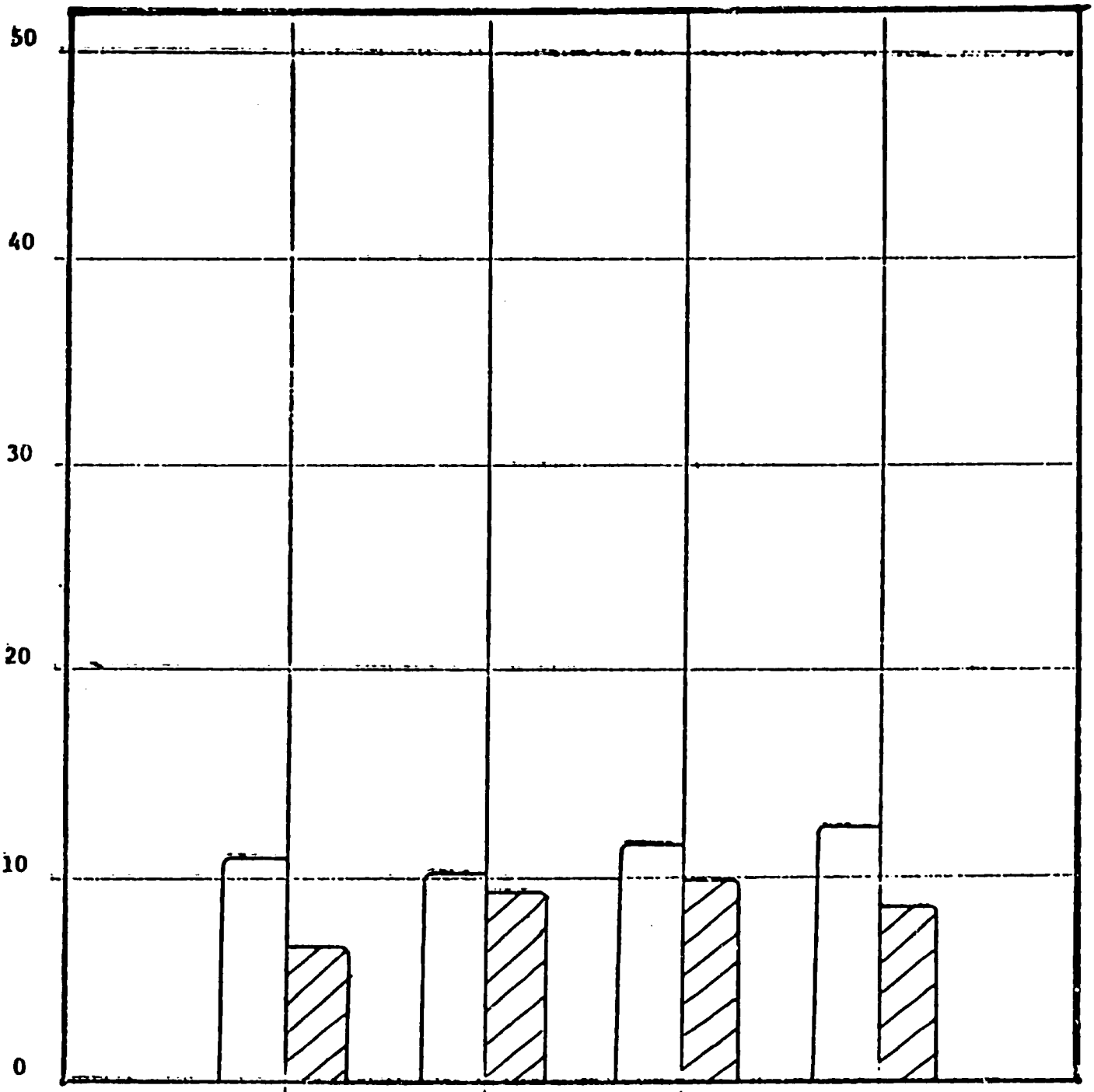
SORGHUM YIELD



	Control	Radio	Radio + Monitor	Radio + Monitor + Agronomist
1973 (Q.229)	13.99	15.31	12.96	16.36
1974 (Q.47)	14.2	14.6	13.0	15.0

Source: Baseline Survey 1973 and Year-End Survey 1974

BEAN YIELD

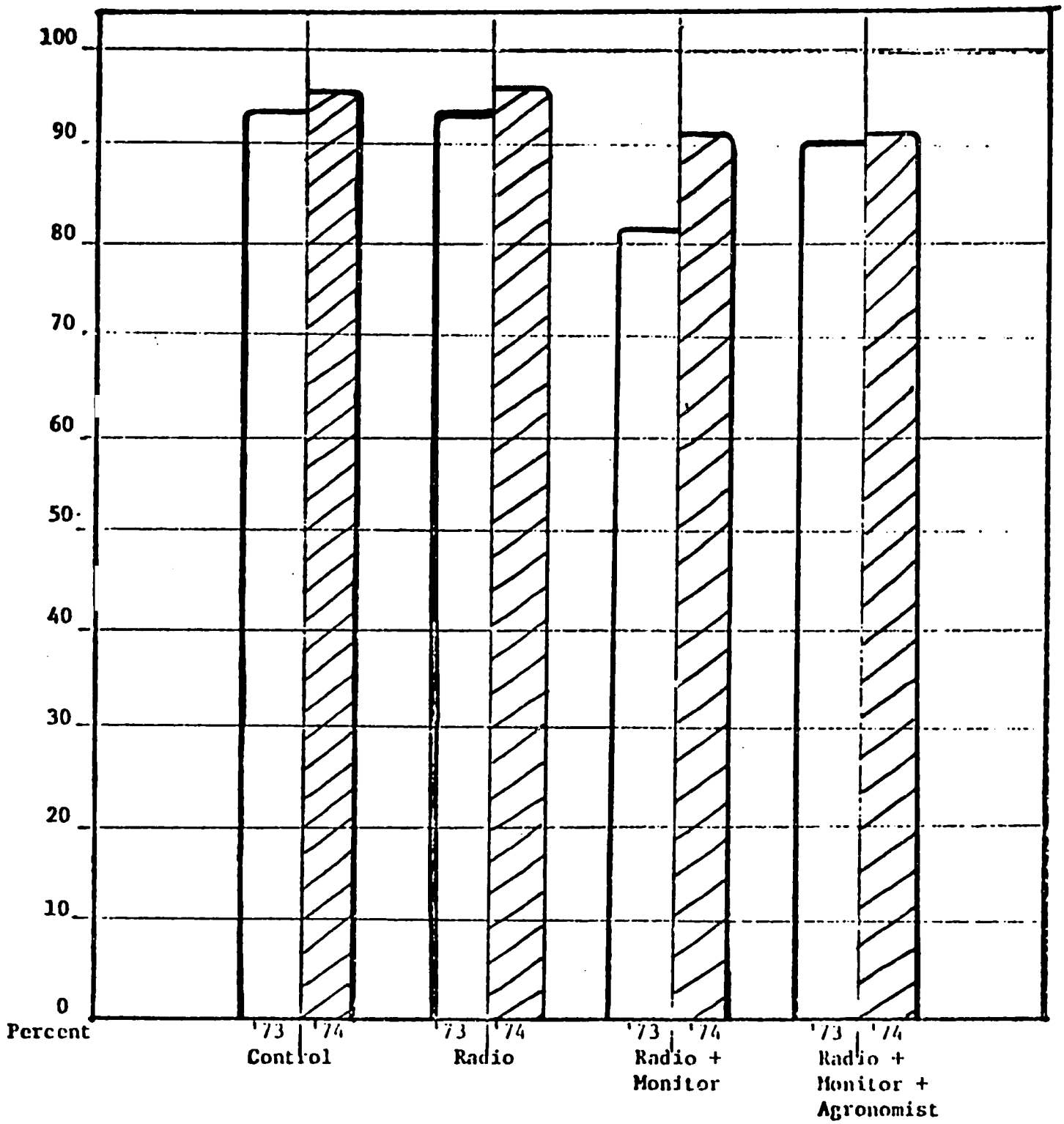


Cubit weight per manzana	Control	Radio	Radio + Monitor	Radio + Monitor + Agronomist
1973 (Q.224)	11.04	10.24	11.84	12.64
1974 (Q.46)	6.65	9.27	9.88	8.57

Source: Baseline Survey 1973 and Year-End Survey 1974

CORN STORAGE:

PERCENT OF FARMERS USING GRANARY

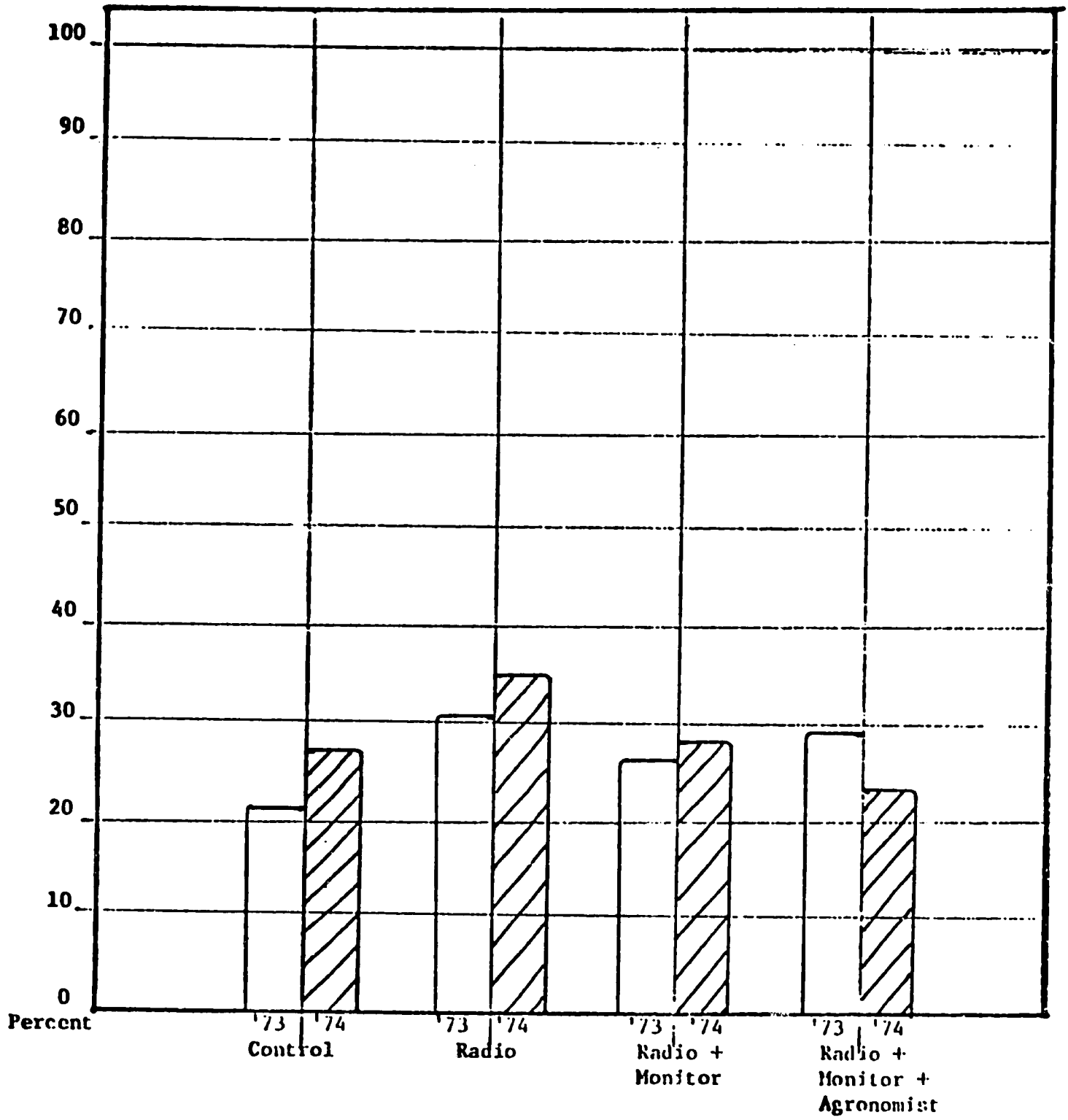


	Control	Radio	Radio + Monitor	Radio + Monitor + Agronomist
1973 (Q.238)	93.2	93.1	81.9	90.4
1974 (Q.151)	95.3	95.5	91.7	91.6

Source: Baseline Survey 1973 and Year-End Survey 1974

BEAN STORAGE:

PERCENT OF FARMERS USING GRANARY

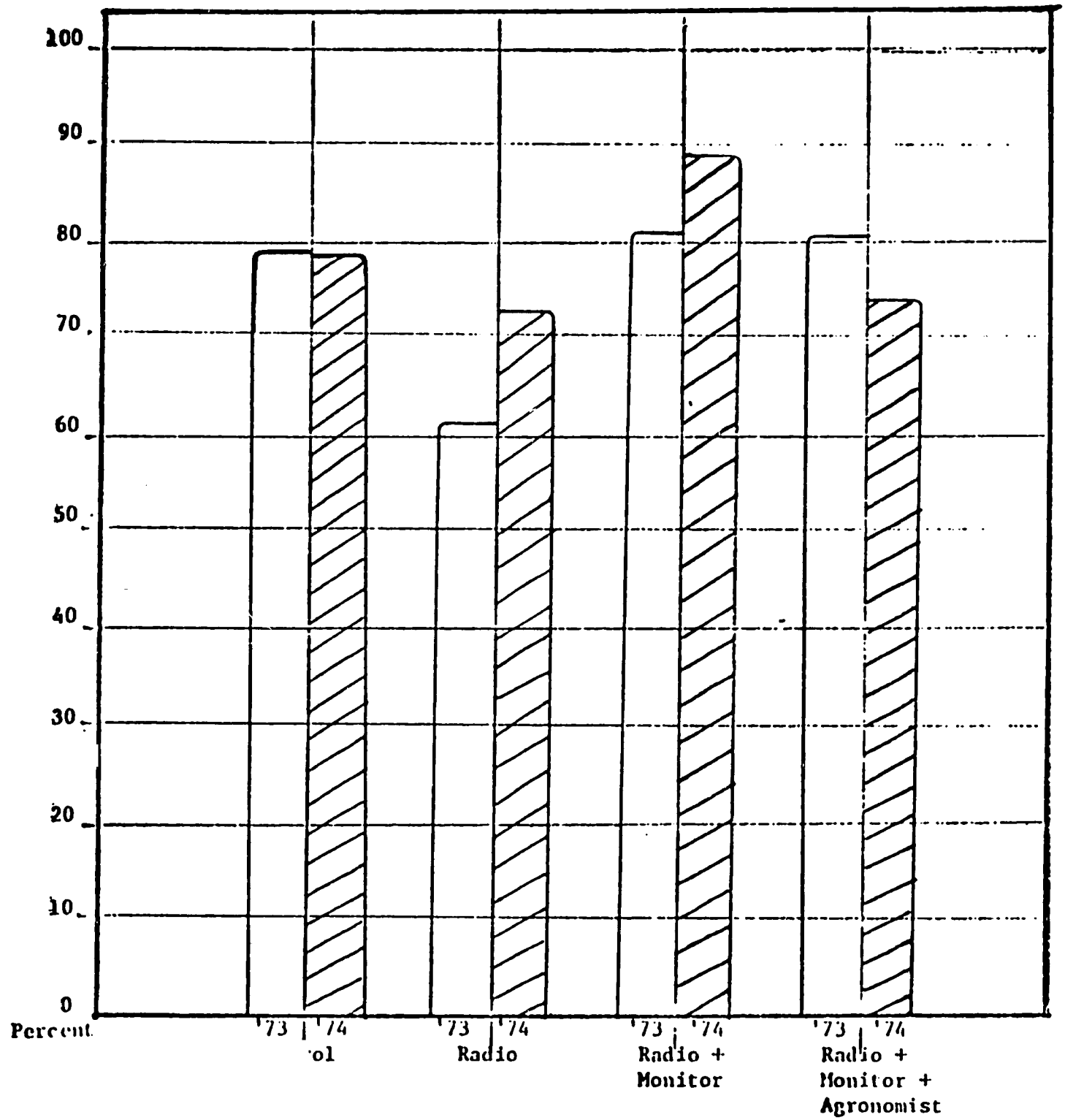


	Control	Radio	Radio + Monitor	Radio + Monitor + Agronomist
1973 (Q.239)	21.2	30.2	26.7	29.6
1974 (Q.152)	27.1	35.7	28.4	23.5

Source: Baseline Survey 1973 and Year-End Survey 1974

USE OF CORN HARVEST:

PERCENT OF FARMERS CONSUMING ALL OF THE CROP AT HOME

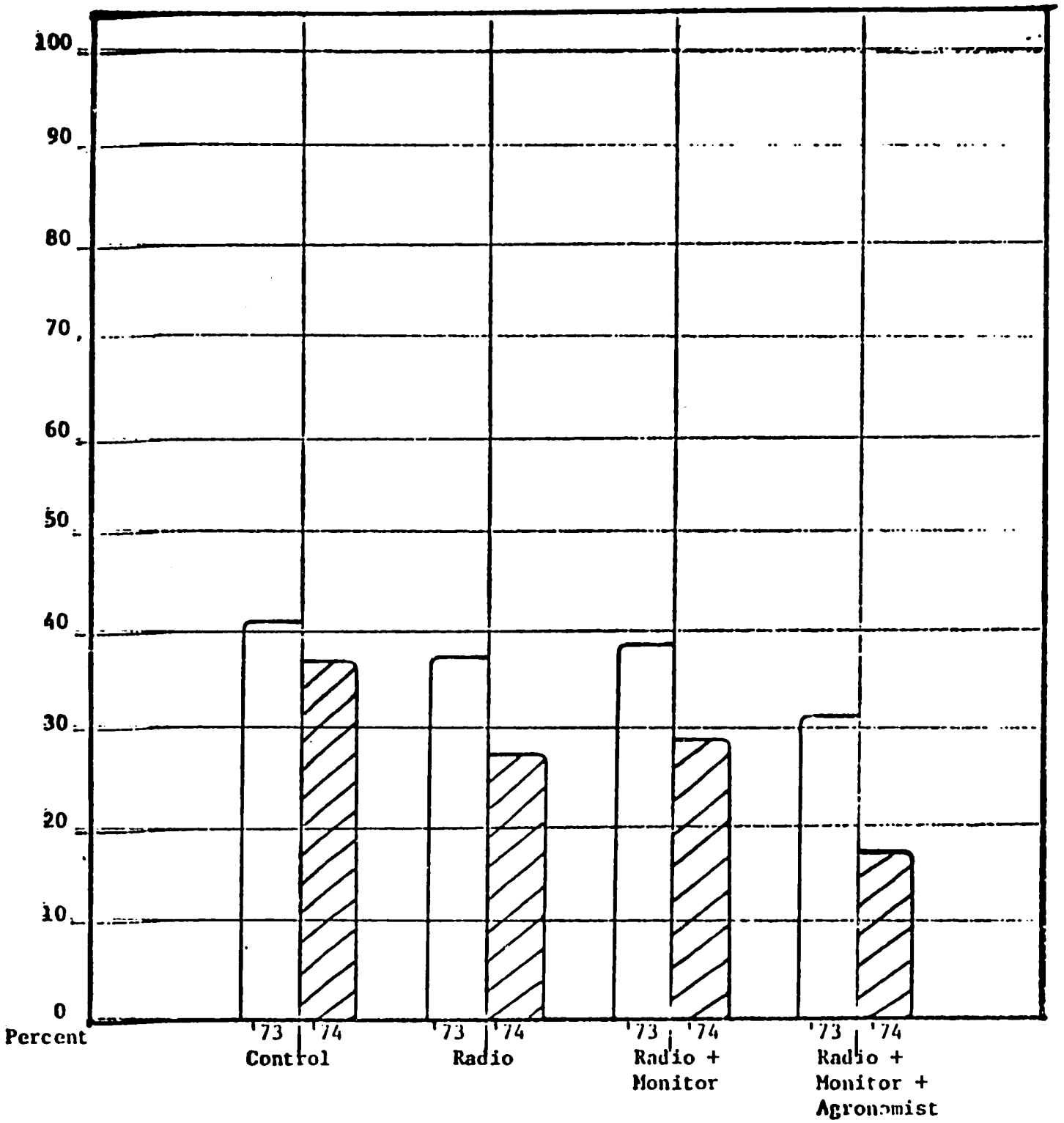


	Control	Radio	Radio + Monitor	Radio + Monitor + Agronomist
1973 (Q.240)	78.8	61.2	81.0	80.8
1974 (Q.145)	78.3	72.3	89.0	73.9

Source: Baseline Survey 1973 and Year-End Survey 1974

USE OF BEAN HARVEST:

PERCENT OF FARMERS CONSUMING ALL OF BEAN HARVEST AT HOME

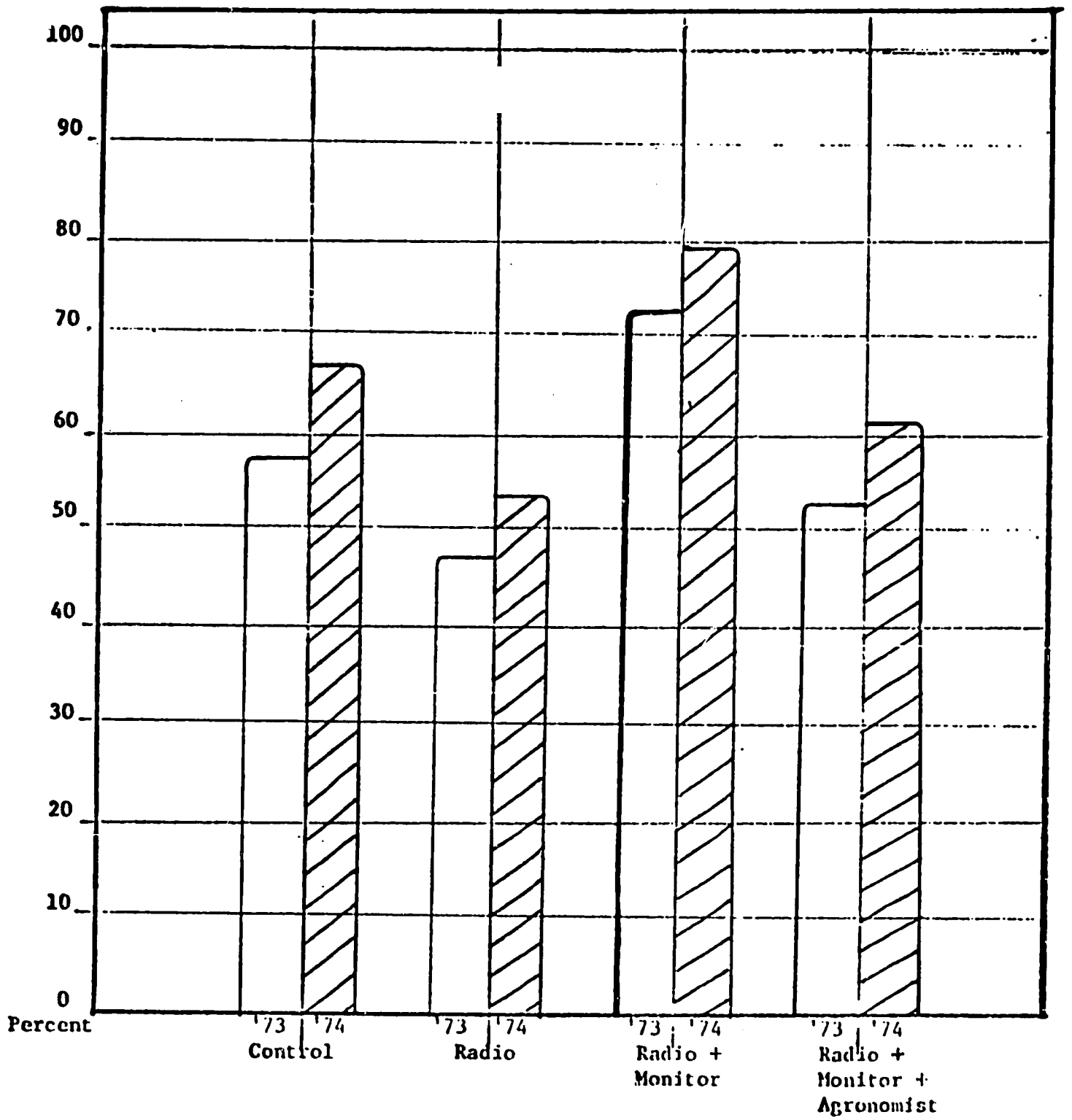


	Control	Radio	Radio + Monitor	Radio + Monitor + Agronomist
1973 (Q.241)	40.9	37.1	38.8	31.2
1974 (Q.146)	36.4	27.7	28.4	17.6

Source: Baseline Survey 1973 and Year-End Survey 1974

SORGHUM HARVEST:

PERCENT OF FARMERS CONSUMING ALL OF SORGHUM HARVEST AT HOME



	Control	Radio	Radio + Monitor	Radio + Monitor + Agronomist
1973 (Q.242)	57.6	47.4	72.4	52.8
1974 (Q.147)	67.4	53.6	79.8	61.3

Source: Baseline Survey 1973 and Year-End Survey 1974

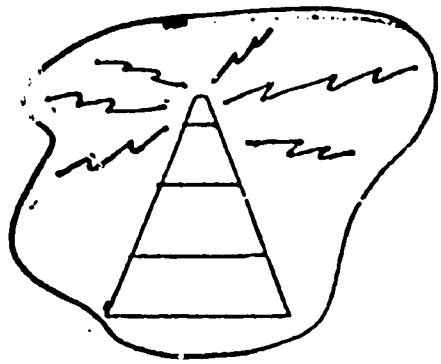
APPENDIX II

THE PROCESS OF EVALUATION

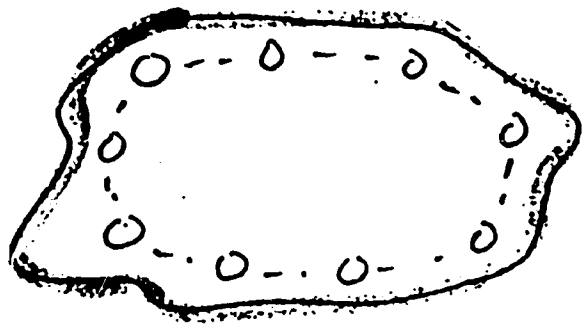
1. DEVELOPMENT OF THE RESEARCH DESIGN.
2. SELECTION OF THE AREAS FOR INTERVIEWING.
3. SELECTION OF THE FARMERS TO BE INTERVIEWED.
4. PREPARATION OF THE QUESTIONNAIRES.
5. SELECTION AND TRAINING OF INTERVIEWERS.
6. INTERVIEWING STRATEGY.
7. DATA PROCESSING.
8. ANALYSIS OF DATA.
9. INTERPRETATION OF RESULTS.

EXPERIMENTAL TREATMENTS TO BE MEASURED IN BVE EVALUATION

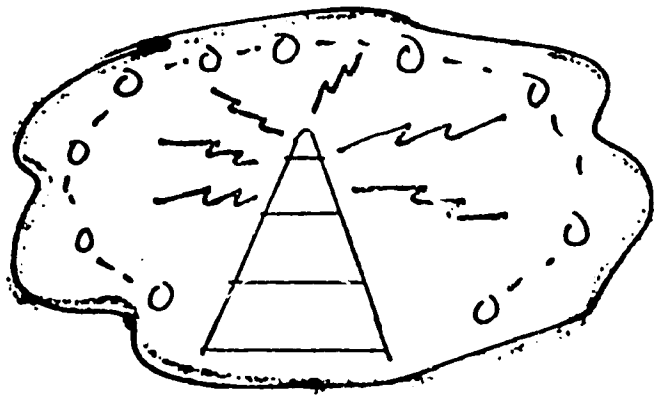
R = RADIO



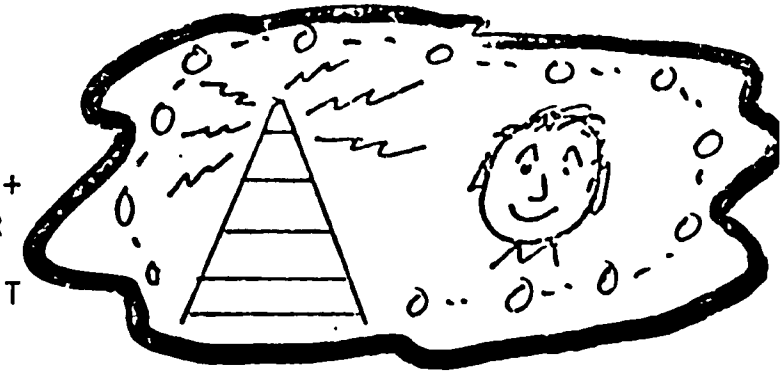
M = MONITOR



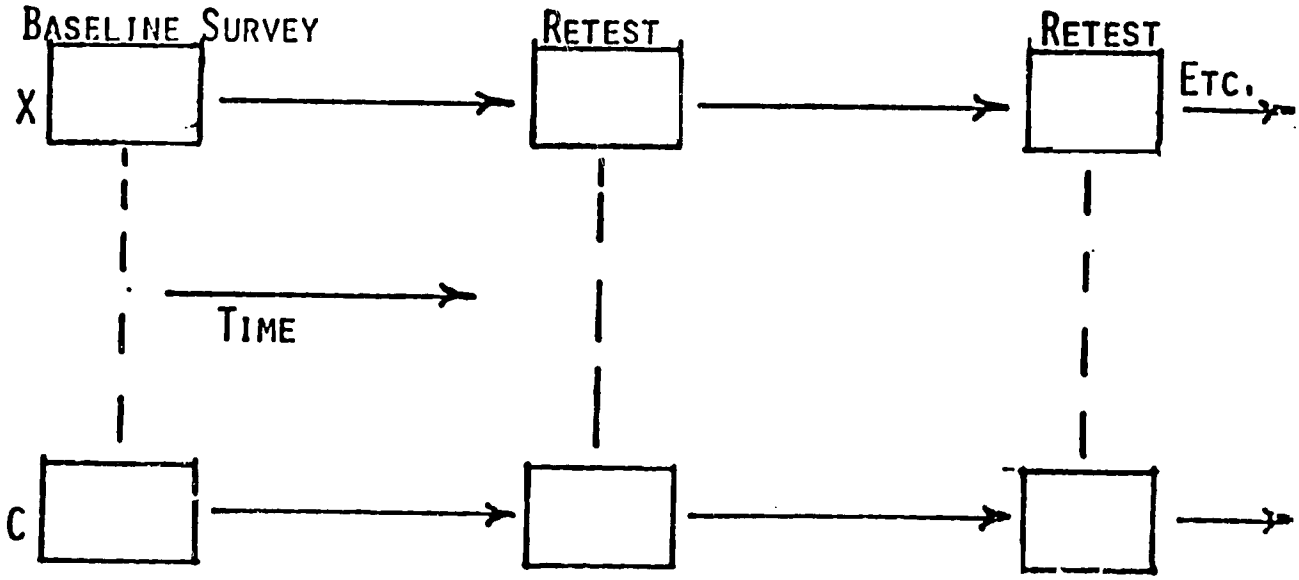
RM = RADIO + MONITOR



RMA = RADIO + MONITOR + AGRONOMIST



BASIC FEATURES OF EXPERIMENTAL DESIGN

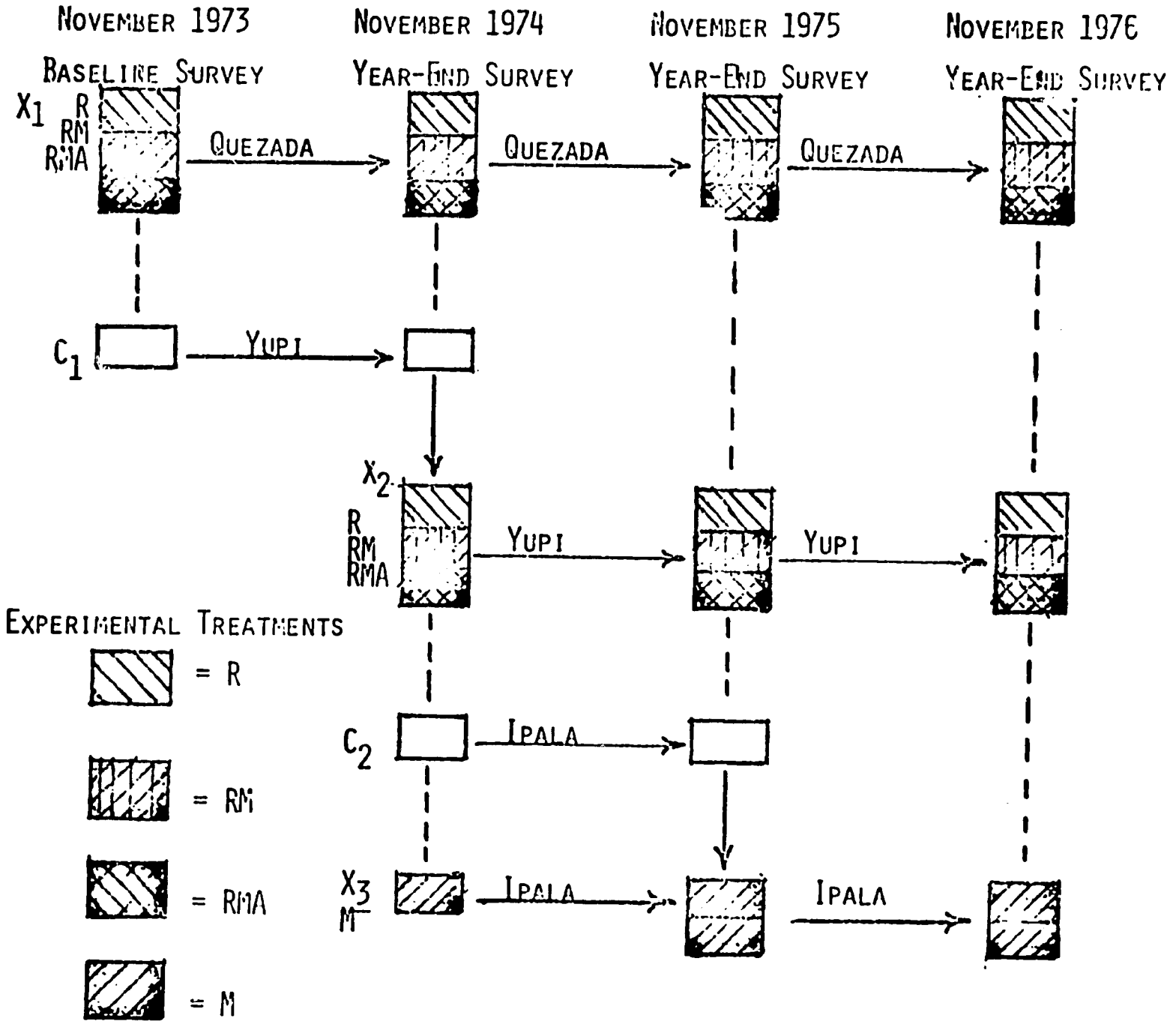


□ = X = EXPERIMENTAL GROUP

□ = C = CONTROL GROUP

DESIGNED TO MEASURE THE RESULTS OF AN EXPERIMENTAL TREATMENT OVER TI

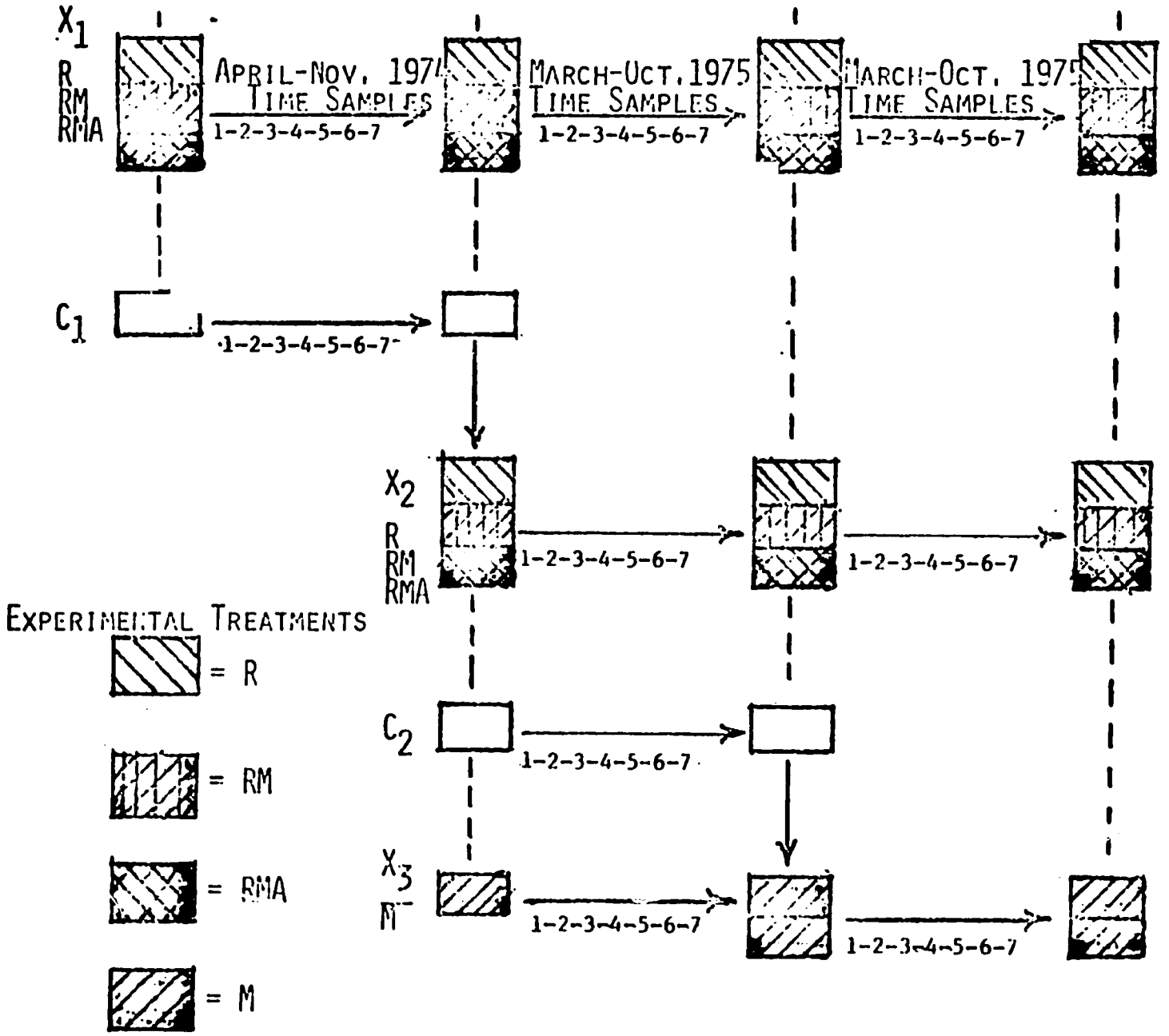
EXPERIMENTAL DESIGN AS USED IN BVE EVALUATION
ORIENTE AREA - SPANISH SPEAKING



MEASURES CHANGE:

1. OVER TIME FOR THREE YEARS
2. BY EXPERIMENTAL TREATMENTS
3. BY GEOGRAPHICAL AREA

MONTHLY TIME SAMPLE-SURVEYS
AS USED IN BVE EVALUATIONS
ORIENTE AREA - SPANISH SPEAKING

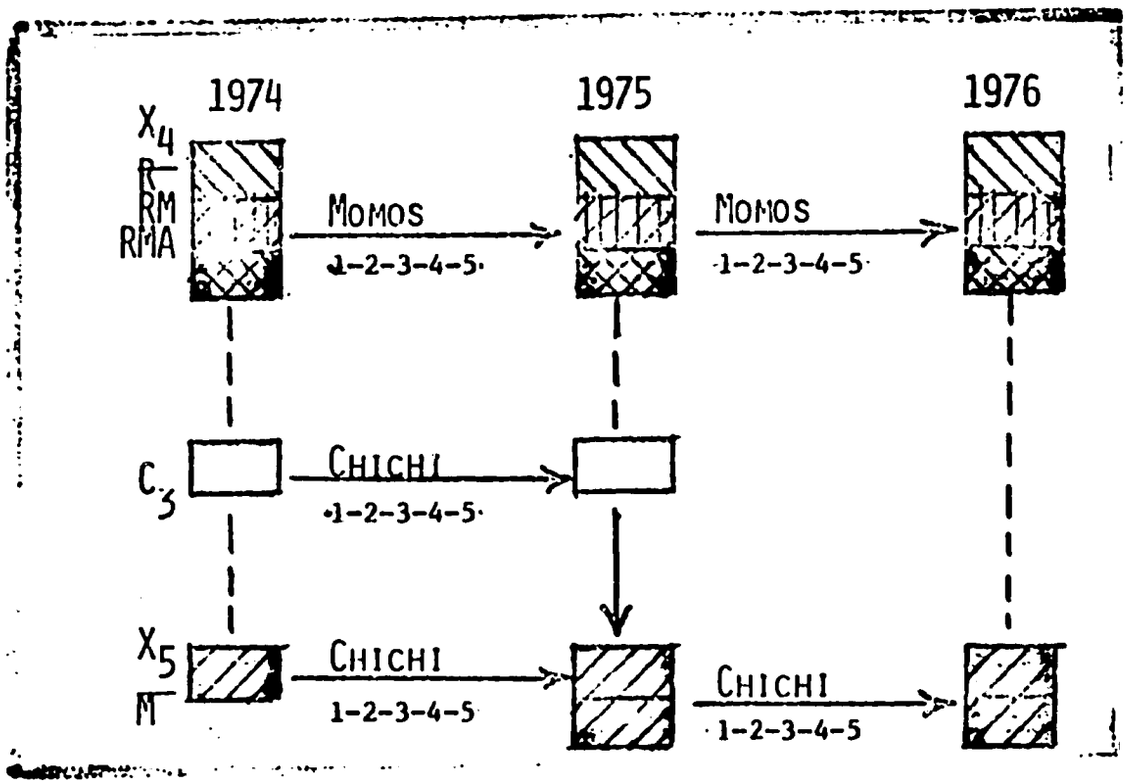


MEASURES CHANGE:

1. OVER TIME FOR THREE YEARS.
2. BY EXPERIMENTAL TREATMENTS.
3. BY GEOGRAPHICAL AREA.
4. BY MONTH FOR IMMEDIATE FEEDBACK TO PROGRAM AND TO HELP EXPLAIN LONG TERM CHANGES.

EXPERIMENTAL DESIGN AS USED IN BVE EVALUATION

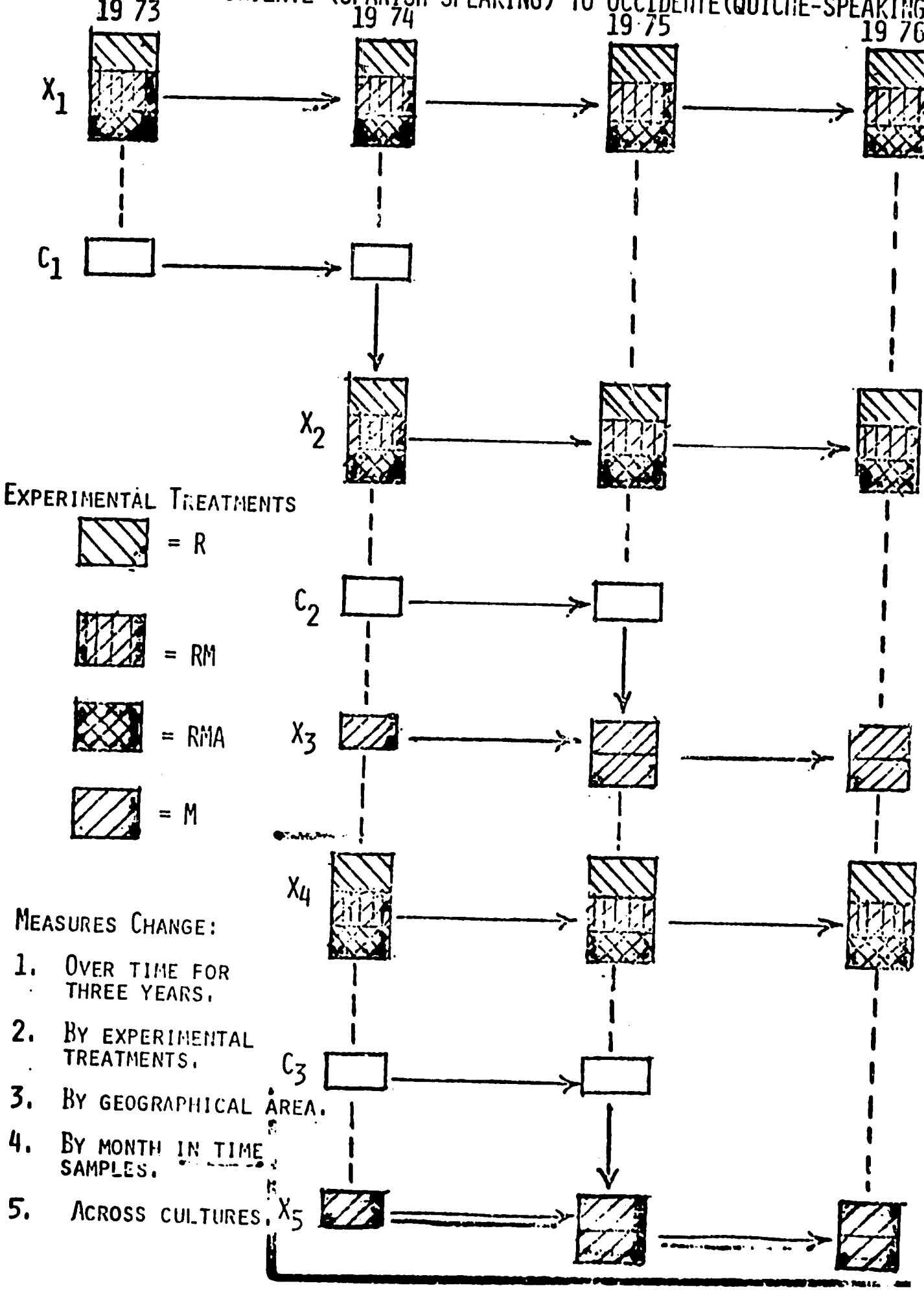
OCCIDENTE AREA - QUICHE SPEAKING



MEASURES CHANGE IN A NON-SPANISH CULTURAL AREA

CROSS CULTURAL MEASUREMENT AS USED IN BVE EVALUATION

COMPARING ORIENTE (SPANISH-SPEAKING) TO OCCIDENTE (QUICHE-SPEAKING)



EXPERIMENTAL TREATMENTS

= R

= RM

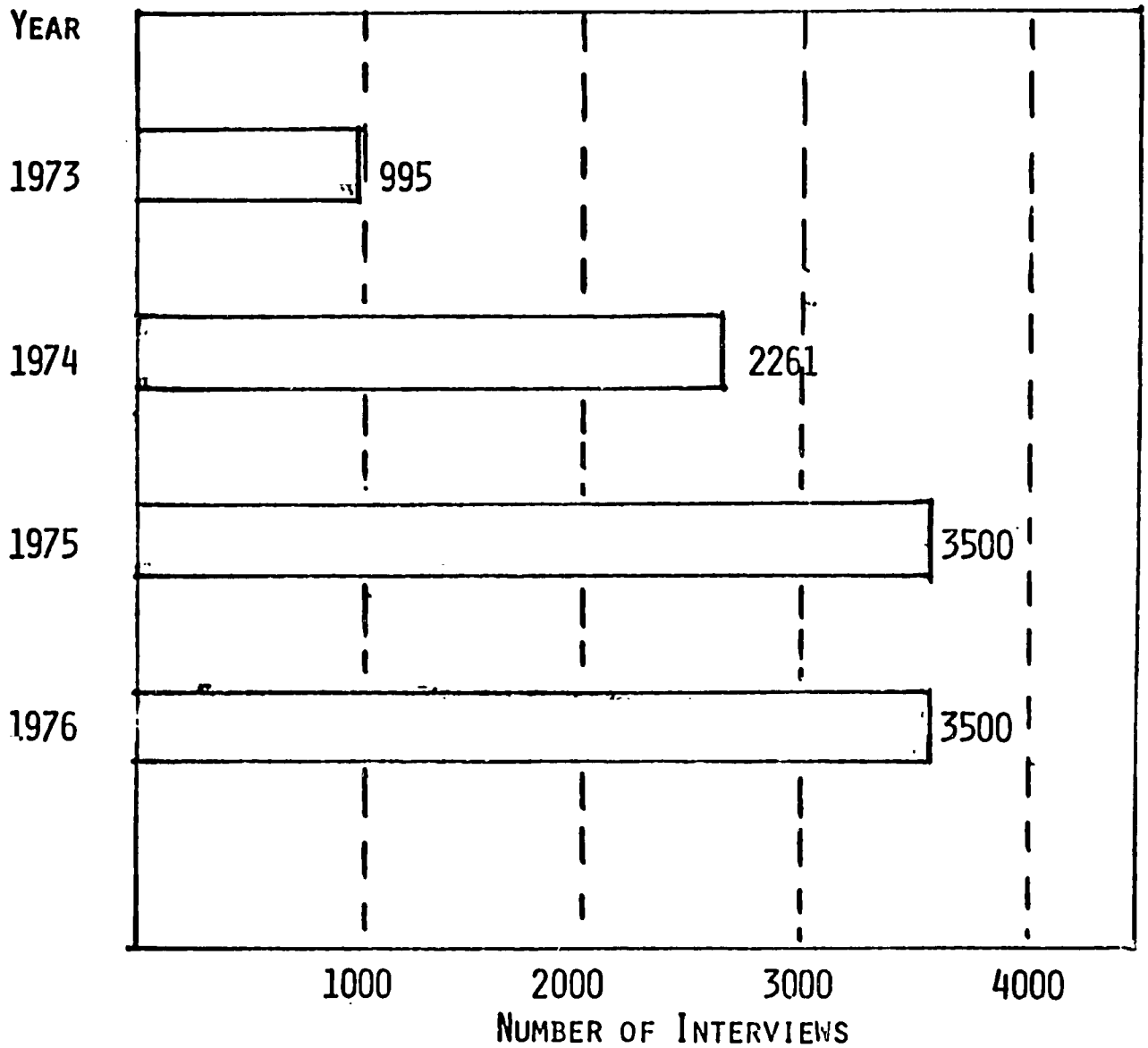
= RMA

= M

MEASURES CHANGE:

1. OVER TIME FOR THREE YEARS.
2. BY EXPERIMENTAL TREATMENTS.
3. BY GEOGRAPHICAL AREA.
4. BY MONTH IN TIME SAMPLES.
5. ACROSS CULTURES.

INTERVIEWS CONDUCTED AS PART OF BVE EVALUATION



DURING LIFE OF PROJECT:

APPROXIMATELY 10,250 SEPARATE INTERVIEWS
WITH 1561 FARMERS
IN 49 VILLAGES
IN 14 TREATMENT AREAS
IN 5 MAJOR GEOGRAPHICAL AREAS, AND
IN 2 CONTRASTING CULTURES.

RESULTS OF EVALUATION

I. WHAT CHANGES EXPECTED?

II. WHAT LEVEL OF CHANGE?

III. WHO CHANGES?

IV. HOW MUCH AND WITH WHICH TREATMENTS?

RESULTS OF EVALUATION

1. WHAT CHANGES EXPECTED:

   --AGRICULTURAL PRACTICES

   -- ALSO --EDUCATIONAL LEVEL

   --HEALTH PRACTICES

   --DIET

   --HOME IMPROVEMENTS

CHARACTERISTICS OF SUBSISTENCE FARMERS PARTICIPATING IN BVE EVALUATION

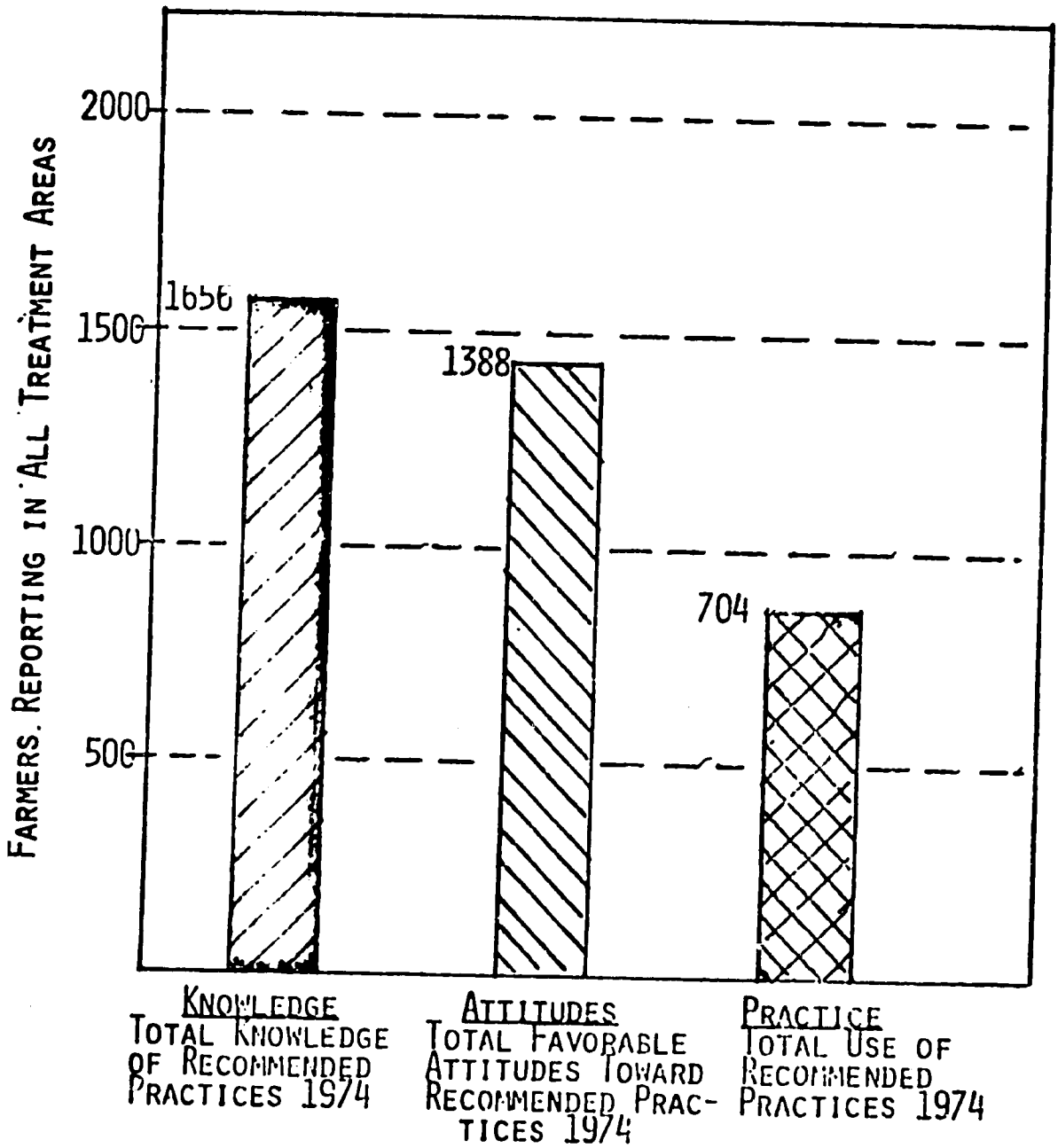
	ORIENTE	OCCIDENTE
LANGUAGE SPOKEN	SPANISH	QUICHE
LITERATE (%)	46	34
ATTENDED SCHOOL (%)	37	23
AVERAGE YEARS OF SCHOOL ATTENDED (ATTENDERS)	2.5	2.3
LISTEN TO RADIO DAILY (%)	92	54
SANITARY TOILET FACILITIES(%)	8	10
FULL-TIME FARMERS (%)	100	98
OWN LAND (%)	81	99
AMOUNT OF LAND OWNED (ACRES)	5	4
USE INSECTICIDES (%)	37	29
AVERAGE CORN YIELD (BUSHEL/ACRE)	11	19
USE CREDIT (%)	18	25
USE FERTILIZER (%)	11	15

RESULTS OF EVALUATION

II. WHAT LEVEL OF CHANGES

K - KNOWLEDGE	"I KNOW THAT 200 POUNDS OF COMPLETE FERTILIZER SHOULD BE APPLIED PER MANZANA AT THE TIME CORN IS PLANTED."
A - ATTITUDES	"I FEEL THAT IT IS BEST TO USE 200 POUNDS OF COMPLETE FERTILIZER PER MANZANA AT THE TIME CORN IS PLANTED AND PLAN TO USE IT IF I CAN GET FERTILIZER AND CREDIT."
P - PRACTICES	"I USED 200 POUNDS OF COMPLETE FERTILIZER PER MANZANA AT THE TIME CORN WAS PLANTED EXACTLY AS WAS RECOMMENDED BY RADIO QUEZA

COMPARISON OF KNOWLEDGE, ATTITUDES AND USE OF RECOMMENDED PRACTICES 1974



SOURCE: 1974 TIME SAMPLES III - VII

RESULTS OF EVALUATION

III. Who changes?

--Old/young

--Spanish-speaking/Quiche-speaking

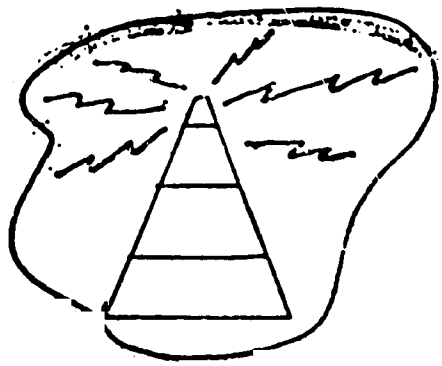
--Literate/Illiterate

--Larger farms/Smaller Farms

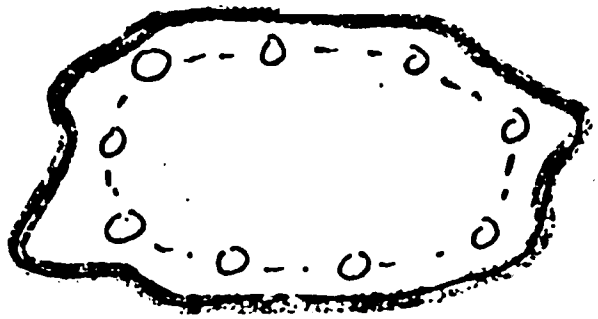
RESULTS OF EVALUATION

IV. WITH WHICH TREATMENTS?

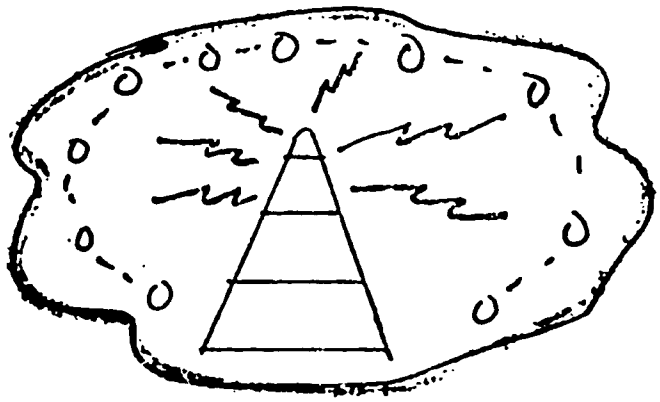
R = RADIO



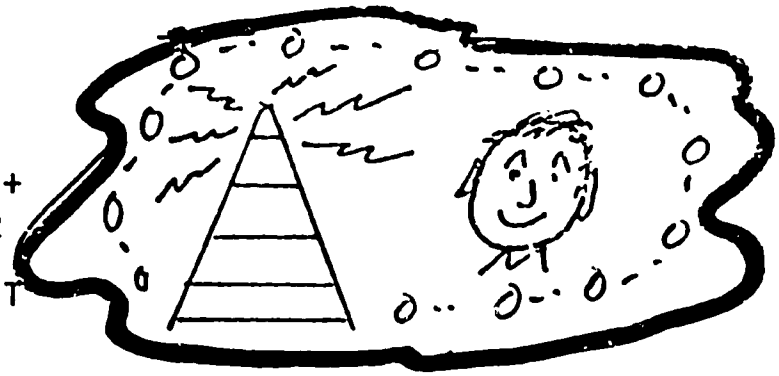
M = MONITOR



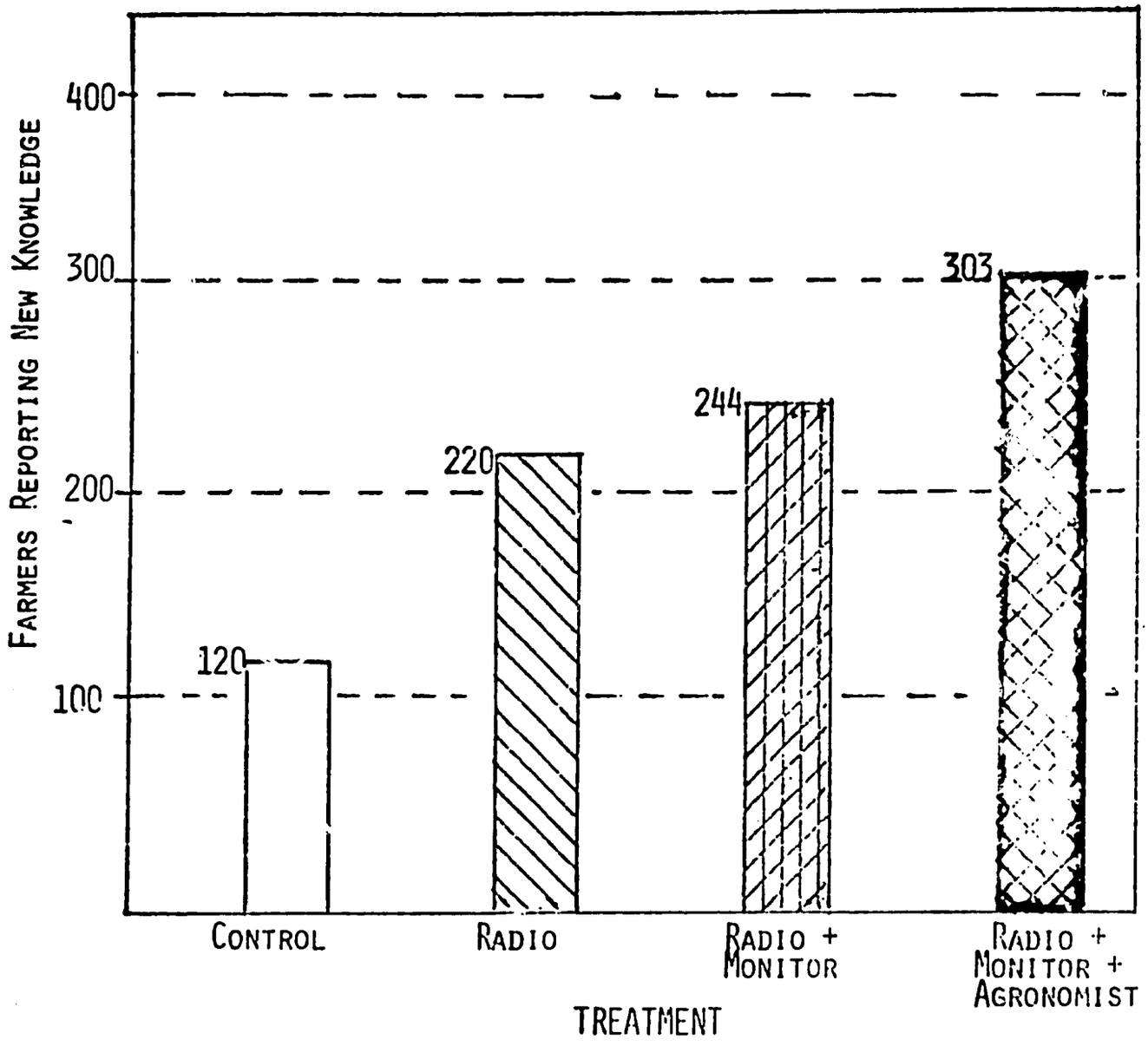
RM = RADIO + MONITOR



RMA = RADIO + MONITOR + AGRONOMIST

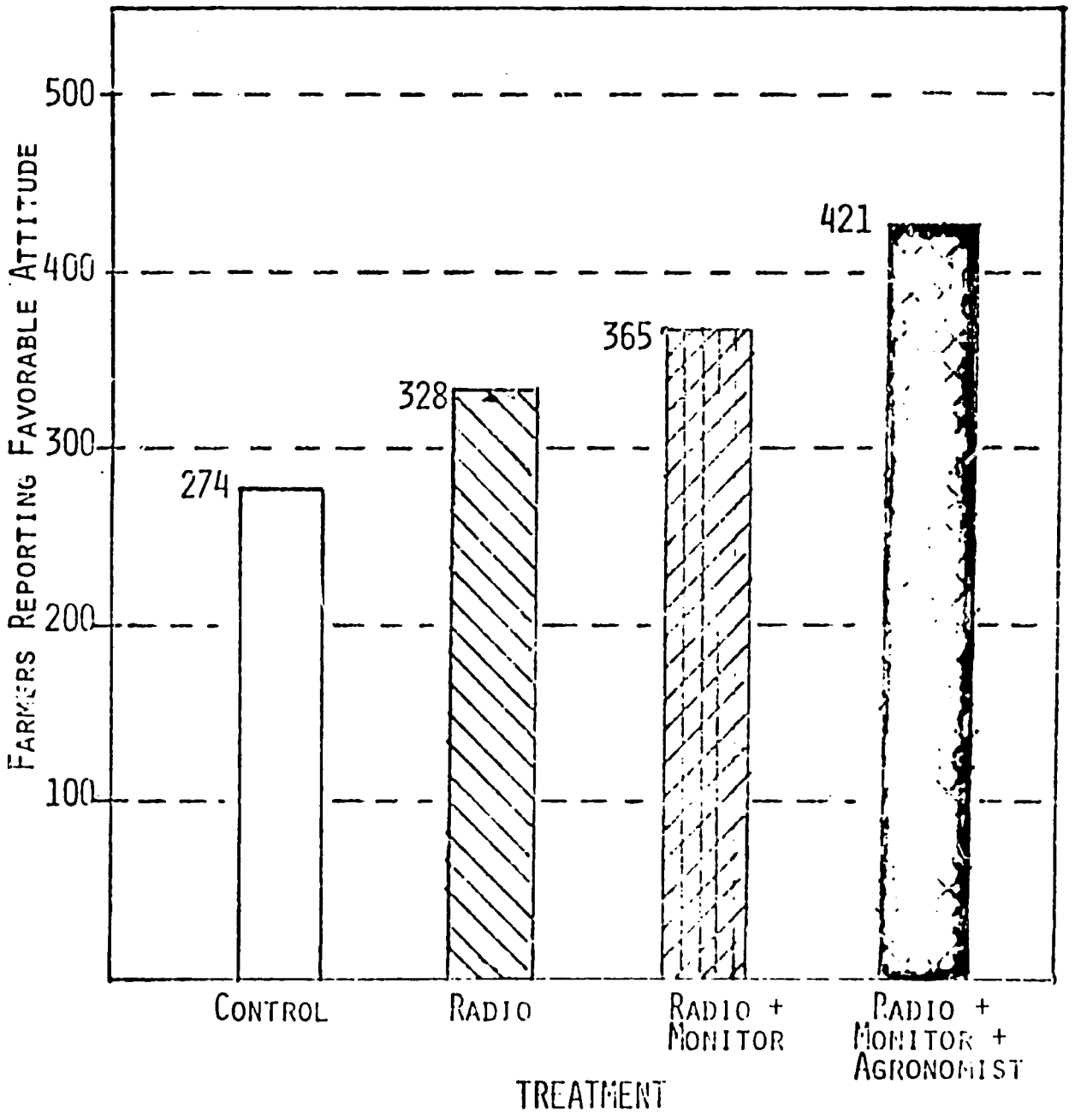


NEW KNOWLEDGE OF RECOMMENDED PRACTICES REPORTED 1974



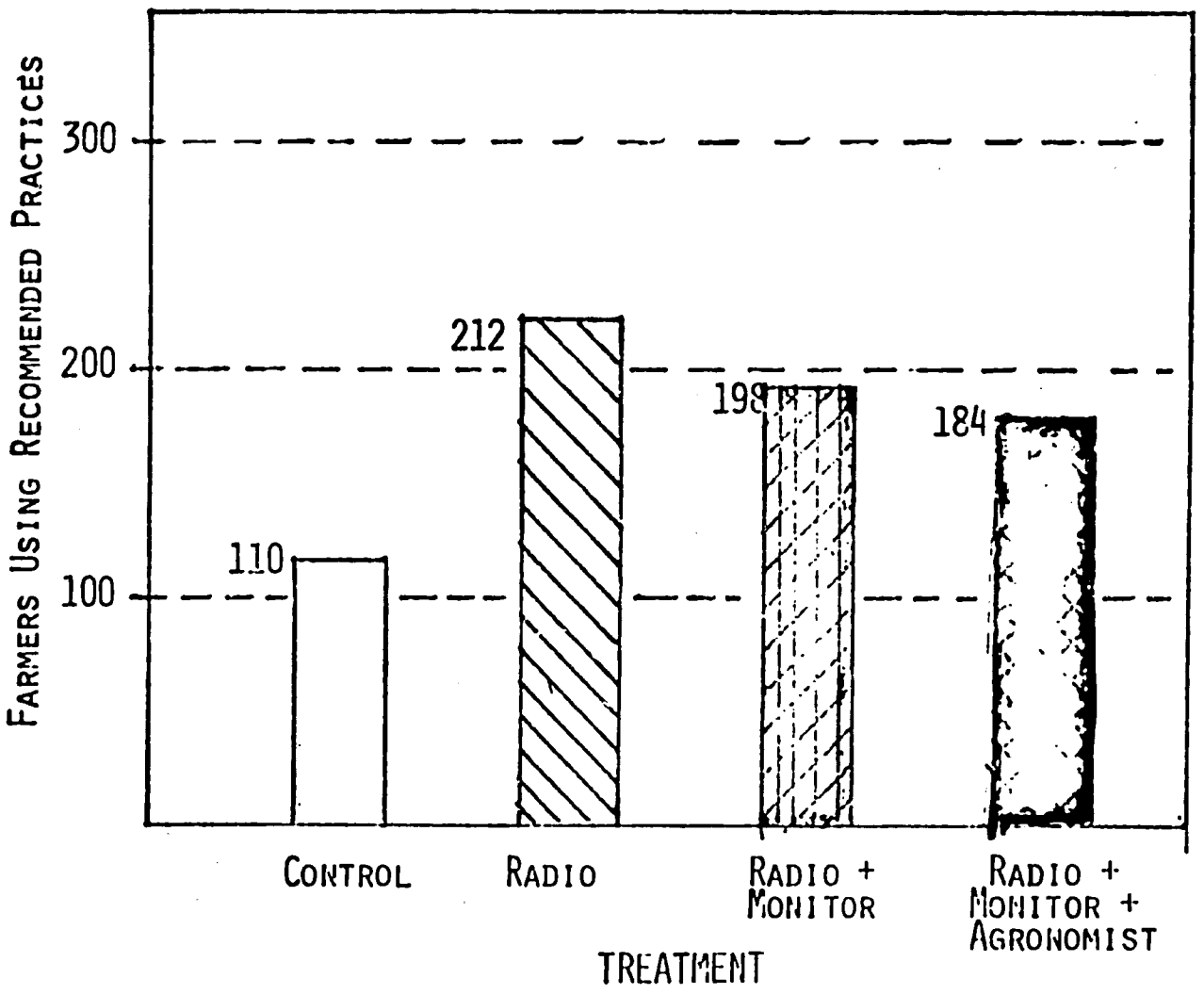
SOURCE: 1974 TIME SAMPLES III - VII

FAVORABLE ATTITUDES TOWARD RECOMMENDED PRACTICES REPORTED 1974



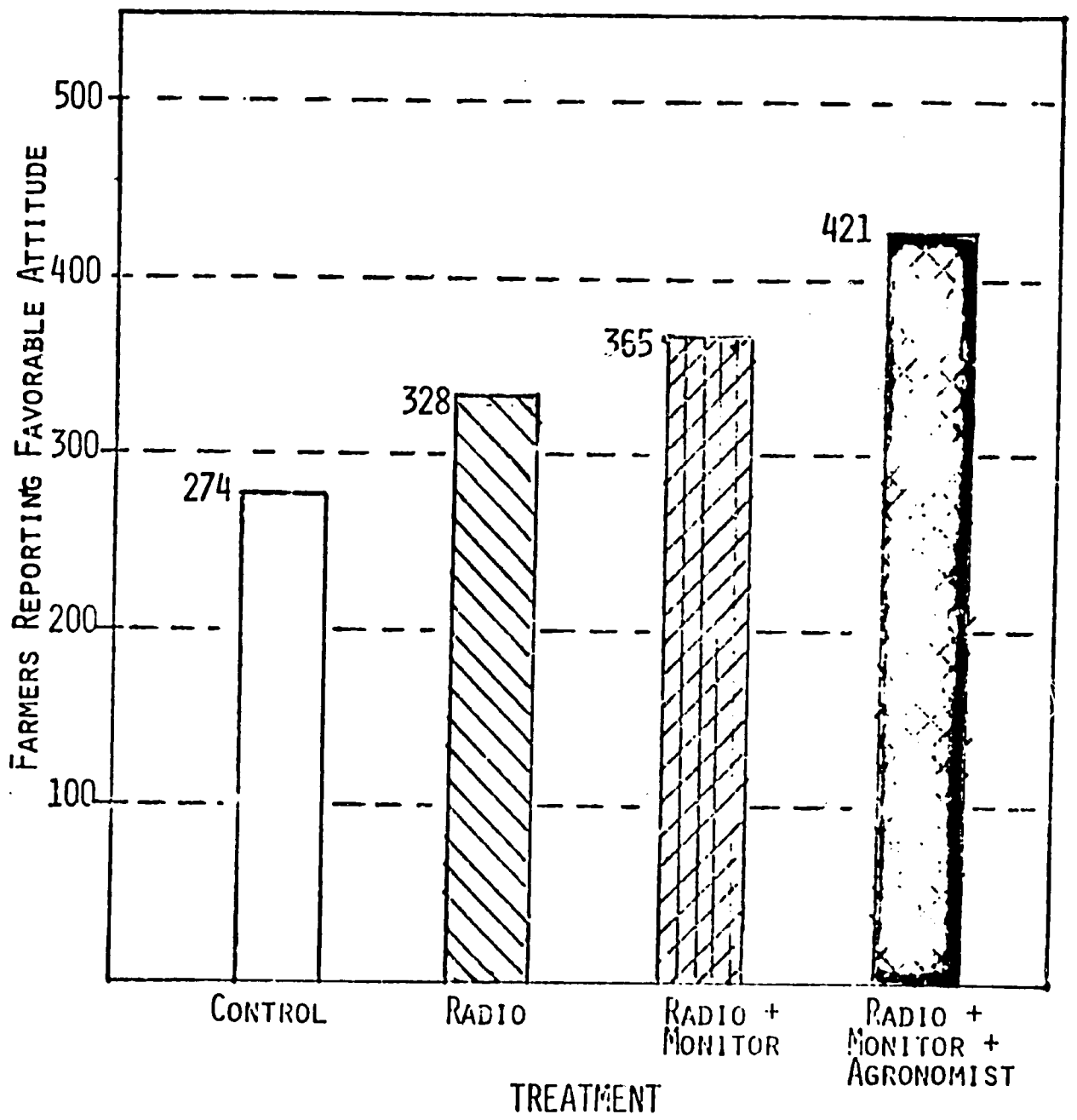
SOURCE: 1974 TIME SAMPLES III - VII

USE OF RECOMMENDED PRACTICES REPORTED 1974



SOURCE: 1974 TIME SAMPLES III - VII

FAVORABLE ATTITUDES TOWARD RECOMMENDED PRACTICES REPORTED 1974



SOURCE: 1974 TIME SAMPLES III - VII

APPENDIX III

WORKING PAPER NO. 3

EVALUATION OF CHANGES IN KNOWLEDGE, ATTITUDE AND PRACTICES AMONG SUBSISTENCE FARMERS IN THE DEPARTMENT OF JUTIAPA, GUATEMALA: A TIME SAMPLING METHODOLOGY

Thomas A. Rich

Edgar G. Nesman

UNIVERSITY OF SOUTH FLORIDA

TAMPA, FLORIDA

MAY, 1975

This report deals with short-term evaluation in the form of development of specific agricultural practices, the incorporation of practices into radio messages and the continuing evaluation of the reception and impact of these messages. The independent variables in this study are the specific agricultural practices delivered through the radio treatments and the dependent variables are change in knowledge, attitude and practice.

Sample Selection*

Subsistence farmers are the target population for this study. To select an area and a population for the study it was necessary to decide on the characteristics of subsistence farmers as they are found throughout the world. They have been characterized in the following way:

1. They used a subsistence form of agriculture.
2. They live in a cluster of houses, from a few hundred to a few thousand people.
3. Have greater self-sufficiency than farmers in industrial states but dependent on cities for special goods.
4. Sell some surplus production for cash.
5. Are ambivalent towards the city in that they need goods but have fear of exploitation.
6. They are bound by traditional values and custom.
7. They are on the average, illiterate.
8. They have low levels of educational attainment.
9. They follow regional patterns of diet, home use of remedies, and use of local practitioners.
10. Are not productive farmers in terms of the national economy (Arensberg and Niehoff, 1971).

From results of a baseline survey conduted in the fall of 1973 and early reconnaisance survey findings, it was found that these farmers do meet most of the characteristics of subsistence farmers. They operate small farms and the particular sample that was chosen had an average size farm of 6.7 acres. They usually own their land although some are renters or use some communal land. Their production is limited to a few basic crops; all of the farmers grow corn, almost all of them grow beans, and many grow sorghum. These crops are grown basically for home consumption. In addition to corn, beans and sorghum, their diet includes a few items that are purchased once a week on a visit to the village or to the regional market center. In addition to their own crops, a large proportion of the farmers buy additional corn and beans to supplement that grown at home. Generally their travel is limited to the market trips and a yearly trip to the capital city or to the coast for season work to supplement the family income. Some also travel yearly to a religious center. The educational levels of these farmers are low and the illiteracy rates are high.

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*See Working Paper No. 1 "The General Characteristics of Subsistence Farmers in the Department of Jutiapa, Guatemala" and Working Paper No. 2 "The Agricultural Characteristics of Subsistence Farmers in the Department of Jutiapa, Guatemala" for complete summary of characteristics of farmers.

New agricultural information comes by way of friends and neighbors or sometimes by radio. There are a few cases where the farmers have had contact with agricultural technicians.

The homes are owned and of simple construction. Tile roofs, adobe walls and dirt floors predominate. Sanitary facilities and the assurance of pure water are lacking. These farmers have high educational aspirations for their children and would still choose to be farmers if they had their choice of other jobs.

The baseline information which was gathered from field interviews of 506 farmers in 1973, provided the information concerning listening habits and the level of information, attitudes, and practices of the subjects. Utilizing this information with further input by agronomists and development specialists, the message was prepared as a series of behavioral objectives. These were stated as specific farm practices and were then incorporated into a monthly sequence of radio broadcasts. Programming begins with behavioral objectives and incorporates them into a script produced for the listening audience. Data is collected by specifically sampling the listening practices to determine if the farmers are listening and to determine the impact on knowledge, attitudes and practice.

Radio programming proceeded in a sequence appropriate to the crop year, and dealt with specific practices related to planting corn, use of credit, use of fertilizers, use of insecticides, method of storage, marketing practice and in all 45 specific practice areas, 36 of which are mentioned in this study (See Table I). Each program was scheduled during an appropriate month relative to the planting or harvesting season.

Data Collection

The time sample procedure consisted of a questionnaire developed from the same behavioral objectives used in programming. A multi-dimensional format was used in which the following questions were a part:

1. What did you do last year (in relation to a given agricultural practice)?
2. What did you do this year (related to same practice)?
3. Have you heard any new information regarding this practice?
4. What was the source of the new information?
5. How do you feel about this practice?

Each questionnaire contained approximately 35 questions that were related to six or seven basic practices that had been broadcast the prior month.

Interviews were conducted with a 20% sample each month from each treatment and control area. The sample was selected randomly from each of the five villages in all four sub-areas. In addition to this randomization, all of the villages were divided into five zones so that a physical stratification of the sample could be made. A person was selected from each of

the five zones so that all of the sections of every village would be interviewed each month. There were 25 people interviewed in each of the four sub-areas giving a total of 100 people interviewed every month in the whole experimental area where the study was conducted. There were seven time samples conducted throughout the year and all of the tabulation summaries are included in the Appendix. Five of the seven are included in this study. A problem was encountered in that many of the farmers were absent from their farms due to work on the coast so that it was not always possible to interview them at the time their name was chosen for the sub-sample. In some cases they were not available for interviewing in any of the monthly surveys (see Table II).

The person selected to do the interviewing was chosen because of his prior experience in survey research, his knowledge of the area, and his rapport with the people. The interviewing procedures for the time sample were pretested and determined to be most effectively carried out in the following way: After the sample was selected and a list of names was available, the interviewer went to the home of the person to be interviewed. Upon arrival he began with an informal conversation in which he presented himself and gave the reason for the visit. After the conversation had proceeded informally he then asked specific questions and filled in the questionnaire.

The data from the questionnaires was field checked, transferred to sense sheets and then to computer cards for standard data analysis. A test of the difference of means was used to compare the effect of different communication treatments on changes in knowledge, attitudes and practices.

Expected Findings

In order to test the comparative impact of mass media (radio) and the combination of other communication treatments, three major areas of hypotheses are proposed. One is directed at the knowledge level (K), the second at the attitude level (A), and the third at the practice level (P). A comparison of change between knowledge, attitude and practice is also included.

Hypothesis related to knowledge.

1. The reported new knowledge of recommended practices in the radio treatment area will be greater than in the control area.
2. The reported new knowledge of recommended practices in the radio/monitor area will be greater than in the radio area.
3. The reported new knowledge of recommended practices in the radio/monitor/agronomist area will be greater than those in the radio/monitor area.

Hypothesis related to attitudes.

1. Favorable attitudes toward recommended practices in the radio area will be greater than those in the control area.

2. Favorable attitudes toward recommended practices in the radio/monitor area will be greater than those in the radio area.
3. Favorable attitudes toward recommended practices will be greater in the radio/monitor/agronomist area than they will be in the radio/monitor area alone.

Hypothesis related to practice change.

1. The increase in the use of recommended practices in the radio area will be greater than those in the control area.
2. The increase in the use of the recommended practice in the radio/monitor area will be greater than those in the radio area alone.
3. The increase in the use of recommended practice of radio/monitor/agronomist will be greater than those of the radio/monitor area.

In addition to the above hypotheses, it would be expected that more farmers would have knowledge of the recommended practices than those that would have a favorable attitude and want to try them out. Also, it would be expected that more farmers would have a favorable attitude toward the use of the practices than the number that had actually used them.

Findings

The results of the 1974 Time Sample Surveys are summarized in Tables III through VIIc. A test for significance between means was used to compare the sub-areas.

Comparative Measurement of New Knowledge. As can be observed in Table III, there is a progressive increase in reported new knowledge of recommended practices by treatment area. Radio is greater than Control and the difference is highly significant (see Table IVa). Radio/Monitor is greater than Radio alone but the difference is not significant (see Table IVb). Radio/Monitor/Agronomist is greater than Radio/Monitor and the difference is significant (see Table IVc).

Comparative Measurement of Favorable Attitudes. As can be observed in Table III, there is a progressive increase in the favorable attitude toward the recommended practices by treatment area. Radio is greater than Control and the difference is significant (see Table Va). Radio/Monitor is greater than Radio alone but the difference is not significant (see Table Vb). Radio/Monitor/Agronomist is greater than Radio/Monitor and the difference is significant (see Table Vc).

Comparative Measurement of Practice Change. As can be observed in Table III, the difference between the reported use of recommended practices in 1973 and 1974 does not follow the same pattern of progressive increase across communication treatment sub-areas as with knowledge and attitudes. There is an absolute decrease in the use of recommended practices from 1973 to 1974 in all sub-areas except one. The decrease in the Radio sub-area is greater than in the Control sub-area although the difference is not significant (see Table VIa). The decrease in the Radio/Monitor sub-area

is less than in the Radio sub-area alone and the difference is significant (see Table VIb). The increase in the Radio/Monitor/Agronomist sub-area is greater than in the Radio/Monitor sub-area although the difference is not significant (see Table VIc).

A comparison between Radio alone and Radio/Monitor/Agronomist combined is found in Tables VIIa, VIIb, and VIIc. There is a significant difference between these two treatments at all three levels--knowledge, attitude and practice.

Comparative Measurement of Knowledge, Attitude and Practices. If it is assumed that all those who used the recommended practice in 1973 also had the knowledge component as well, then this can be added to "new knowledge" for a count of "knowledge" 1974" of 1650 practices. This can be compared to the "favorable attitude: 1974" which is reported as 1388 practices. In turn, this can be compared to reported "practice use: 1974" of 704 practices. This shows reported knowledge of recommended practices to be greater than reported favorable attitudes toward these practices. It also shows that the reported favorable attitudes toward recommended practices are considerably more numerous than the use of the practices. There are many assumptions in this procedure and caution is advised in taking these comparisons as conclusive.

Discussion and Implications

From the preliminary analysis of the data it would appear that mass media (radio) can be used to effect change in knowledge and attitudes among a traditional population such as the subsistence farmers in southeastern Guatemala. (Both hypotheses comparing radio to no radio at the level of knowledge and attitudes were confirmed.) It also suggests that the possibilities of knowledge, attitude and practice change increase as group meetings and personal visits of technicians are added to the message system. (Two of the four hypotheses were confirmed. The addition of the monitor alone to radio does not make a significant difference but it is found that the results from the combined interpersonal treatment of monitor and agronomist with the mass treatment of radio is significantly greater than with radio alone. This is true at the levels of knowledge, attitudes and practices.) The possibilities of changing practices as compared to knowledge and attitudes, at least within the short period of one year by the use of radio or radio combined treatments, is not as clearly substantiated by the data from the time sample surveys.

One of the greatest problems in using a single year for the measurement of change in agricultural practices is that many things in the natural and cultural environment change from year to year making it impossible to use a desired practice a given year although it is generally adopted in the long run. The use of fertilizers in 1974 is just such a case. The international oil crises had a direct effect on the availability and price of fertilizers. Even when available, the price in 1974 was at least three times that of 1973. One of the sub-areas (the one that was randomly chosen for Radio treatment alone) already had used many of the recommended farm

practices related to chemical fertilizer prior to the initiation of the Basic Village Education program so that the impact of the fertilizer shortage gave a negative effect. Some indication of the impact of fertilizer shortage is available from the data presented here but only long term measurement of change will give a more accurate assessment. For example, 40% of the farmers interviewed said they had used recommended types of fertilizer at seeding time in 1973 but only 23% used it in 1974 in spite of increased knowledge and favorable attitudes. The responses on non-fertilizer items were in contrast to the above example. In response to the question on the order of weeding and hilling corn, 33% of the farmers interviewed said they had used the recommended practice in 1973 and this increased to 41% in 1974. It should be mentioned also that 1973 was one of the best crop years that has been experienced in the study area during the last decade.

No attempt has been made in this summary to analyze the message content or methods of presentation in the different treatment areas. A further analysis by practice could give an indication of which ones had the greatest impact.

This summary is only one of a series that will be conducted as part of the Basic Village Education Project so that the present findings, which are tentative in nature, can be further confirmed or amplified in the future. The actual measurement of crop yields will be an important part of the project.

The hypotheses examined are illustrative of the potential of time sampling for ongoing evaluation of a field project in Basic Village Education. The reader may wish to pursue other areas in the summary codebook tables that follow.

TABLE I

BASIC VILLAGE EDUCATION

SUGGESTED PRACTICES MEASURED IN 1974 TIME SAMPLE SURVEYS

TS-3	3	Soil disinfecting
	8	Selection of corn seed
	13	Number of corn seed per hill
	18	Type of fertilizer at seeding
	23	Amount of fertilizer per manzana
	28	How to apply fertilizer
	33	How to measure amount of fertilizer applied by hill dropping
TS-4	3	Use of insecticides
	8	Height of weeds at first weeding
	13	Association of weeding and hilling
	18	Use of weed control
	23	Use of fungicide
	28	How to drain steep land
	33	How to drain flat land
	38	How to drain low land
TS-5	3	Control of insects in beans
	8	Safety precautions with insecticide use
	13	Type of insecticide to control corn ear worm
	18	How to plant second crop/association
	23	How to obtain second crop-sorghum seed
	28	How to obtain second crop-corn seed
TS-6	3	Use of compost piles
	8	Advisor for fertilizers
	18	Type of fertilizer/initiation of flowering corn
	23	Amount of fertilizer per manzana on corn/bean association
	28	Amount of fertilizer per manzana on sorghum/bean association
	33	Proper time to disinfect soil with insecticides
	38	Advisor to identify crop diseases
	13	Timing of fertilizer at initiation of flowering
TS-7	3	First weeding of the corn field/determined by weed height
	8	Second weeding of the corn field/determined by weed height
	13	Order in which you should weed, hill and fertilize
	18	Order in which you should weed and hill your first crop of corn
	23	Insecticide most effective for the diabrotica beetle
	28	How to mix the insecticides used to control the diabrotica beetle
	33	Advisor about use of insecticides on the crops

TABLE III

BASIC VILLAGE EDUCATION: GUATEMALA

REPORTED KNOWLEDGE, ATTITUDE AND USE OF RECOMMENDED AGRICULTURAL PRACTICES

Communication Treatment

Response by Experimental Sub-Area*

All Practices		Control	Radio	Radio + Monitor	Radio + Monitor + Agronomist	Total All Sub-Areas**
Use 1973	No.	148	254	200	167	769
	%	16.4	28.2	22.2	18.6	21.4
New knowledge: 1974	No.	120	220	244	303	887
	%	13.3	24.4	27.1	33.7	24.6
Favorable attitude: 1974	No.	274	328	365	421	1388
	%	30.4	36.4	40.6	46.8	38.6
Use 1974	No.	110	212	198	184	704
	%	12.2	23.6	22.0	20.4	19.6
Change in use 1973-74 ***	No.	-38	-42	-2	17	-65
	%	- 4.2	- 4.7	-0.2	1.9	- 1.8

*Total possible responses = 900.

**Total possible responses = 3600.

*** Negative change due to fertilizer shortage and adverse growing conditions. See following page for further discussion.

Source: 1974 Monthly Time Samples III through VII.

TABLE II

BASIC VILLAGE EDUCATION

SUMMARY OF INTERVIEWS IN 1974 TIME SAMPLE SURVEYS

1. Total number of monthly time sample surveys (TS) included in study = 5.

2. Number of practices included in each survey.

   1. TS III = 7 (less fertilizer = 3)
   2. TS IV = 8 (less fertilizer = 8)
   3. TS V = 6 (less fertilizer = 6)
   4. TS VI = 8 (less fertilizer = 3)
   5. TS VII = 7 (less fertilizer = 6)

Total Practices=36 (Total practices less fertilizer = 26)

3. Number of respondents chosen for each survey:

   1. Control sub-area = 25
   2. Radio sub-area = 25
   3. Radio + monitor sub-area = 25
   4. Radio + monitor + agronomist = 25

   Total respondents 100

4. Total respondents chosen from each sub-area for all five surveys:

   1. Control sub-area = 125
   2. Radio sub-area = 125
   3. Radio + monitor sub-area = 125
   4. Radio + monitor + agronomist = 125

   Total respondents 500

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BASIC VILLAGE EDUCATION: GUATEMALA

Reported New Knowledge of Recommended Agricultural Practices 1974

TABLE IVa

CONTROL	RADIO
120*	220
0.1317**	0.2470
T = 5.70 d.f. = 248 P = 0.000 Difference between sub-areas: highly significant	

TABLE IVb

RADIO	RADIO + MONITOR
220	244
0.2470	0.2701
T = 0.96 d.f. = 248 P = 0.339 Differences between sub-areas: not significant	

TABLE IVc

RADIO + MONITOR	RADIO + MONITOR + AGRONOMIST
244 0.2701	303 0.3320
= 2.23 = 248 P = 0.027 Difference between sub-areas: significant	

*Total responses (900 possible)
**Mean response of all respondents (N=125)

Source: 1974 Monthly Time Samples III through VII.

BASIC VILLAGE EDUCATION: GUATEMALA

Reported Favorable Attitudes Toward Recommended Practice 1974

TABLE Va

CONTROL	RADIO
274* 0.3088**	328 0.3720
T = 2.41 d.f. = 248 P = 0.017 Difference between sub-areas: significant	

TABLE Vb

RADIO	RADIO + MONITOR
328 0.3720	365 0.4082
T = 1.30 d.f. = 248 P = 0.194 Difference between sub-areas: not significant	

TABLE Vc

RADIO + MONITOR	RADIO + MONITOR + AGRONOMIST
365 0.4082	421 0.4713
T = 2.09 d.f. = 248 P = 0.038 Difference between sub-area: significant	

*Total responses (900 possible)
**Mean response of all respondents (N=125)

Source: 1974 Monthly Time Samples III through VII.

BASIC VILLAGE EDUCATION: GUATEMALA

Reported Change in Use of Recommended Practices 1973-1974

TABLE VIa

CONTROL	RADIO
-38* -0.0404**	-42 -0.0471
T = -0.40 d.f. = 248 P = 0.689 Differences between sub-areas: not significant	

TABLE VIb

RADIO	RADIO + MONITOR
-42 -0.0471	-2 -0.0002
T = 2.53 d.f. = 248 P = 0.012 Differences between sub-areas: significant	

TABLE VIc

RADIO + MONITOR	RADIO + MONITOR + AGRONOMIST
-2 -0.0002	+17 0.0184
T = 1.11 d.f. = 248 P = 0.269 Difference between sub-areas: not significant	

*Total responses (900 possible)
**Mean response of all respondents (N=125)
Source: 1974 Monthly Time Samples III through VII.

BASIC VILLAGE EDUCATION: GUATEMALA

Reported New Knowledge, Favorable Attitudes and Change in Practices: A Comparison of the Effect of Radio vs. Radio/Monitor/Agronomist

Table VIIa
New Knowledge 1974

RADIO	RADIO + MONITOR + AGRONOMIST
22.0* 0.2470**	303 0.3320
T = 3.31 d.f. = 248 P = 0.001 Difference between sub-areas: highly significant	

Table VIIb
Favorable Attitude 1974

RADIO	RADIO + MONITOR + AGRONOMIST
328 0.3720	421 0.4713
T = 3.46 d.f. = 248 P = 0.001 Difference between sub-areas: highly significant	

Table VIIc
Change in Use 1973-74

RADIO	RADIO + MONITOR + AGRONOMIST
-42 -0.0471	+17 0.0184
T = 3.67 d.f. = 248 P = 0.000 Difference between sub-areas: highly significant	

*Total Responses (900 possible)
**Mean response of all respondents (N = 125)
Source: 1974 Monthly Time Samples

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APPENDIX IV

Evaluation Report
April 16, 1975

BASIC VILLAGE EDUCATION

COMPARATIVE INFORMATION ON EXPERIMENTAL AND CONTROL AREAS

IN ORIENTE AND OCCIDENTE:

SELECTED ITEMS FROM 1974 BASELINE/YEAR-END SURVEY

Twenty-four items have been selected for comparison of the major areas and sub-areas to be included in the 1975 program of Basic Village Education. These items include:

1. Occupation
2. Land tenure arrangement
3. Radio use
4. Sanitary facilities
5. Family size
6. Educational characteristics
7. Selected agricultural practices
8. Crop yields

There is considerable variation between major areas in some of these characteristics as can be observed in Table I. The differences between sub-areas within each of the major areas can be observed in Tables II-V.

Evaluation Report
April 30, 1975
(Revised supplement
for Evaluation Report
of April 16, 1975)*

BASIC VILLAGE EDUCATION: GUATEMALA

COMPARATIVE INFORMATION

SELECTED ITEMS FROM 1974 SURVEY

Major Area Comparisons

TABLE I

	Area/s	Oriente			Occidente	
		Quezada	Yupi	Ipala	Momos	Quiche
13.	Occupation: "Farmer" (%)	100.0	99.7	100.0	98.3	100.0
26.	Use hybrid seed corn (%)	3.2	1.6	0.4	0.0	0.0
45.	Average corn yield (growers only) (qq/mza)	11.0	10.45	9.92	19.0	15.82
46.	Average bean yield (growers only) (qq/mza)	8.53	6.88	18.0	5.2	2.61
99.	Use insecticides (%)	37.1	24.1	13.3	29.3	11.1
122.	Use chemical fertilizer on corn at flowering time (% using more than 1 qq/mza)	10.5	5.4	1.2	14.6	9.2
125.	Use chemical fertilizer on corn/ beans at flowering time (% using more than 1 qq/mza)	2.5	0.5	5.9	40.1	30.2
169.	Use credit (%)	18.1	9.1	7.9	25.2	12.5
174.	Visited by agronomist (%)	73.7	37.0	20.0	3.6	0.0
182.	Own land (%)	80.5	69.6	52.5	99.3	99.5
	Average size of land owned (owners only) (mzs)	3.05	2.52	2.73	2.35	1.57
183.	Rent land (%)	27.3	42.6	60.1	2.6	4.8
	Average size of rented land (renters only) (mzs)	1.93	1.87	2.14	0.0	0.8
184.	Has communal land (%)	9.2	4.5	0.4	0.3	0.0
	Average size of communal land (communal operators only)(mzs)	2.75	3.7	0.0	0.0	0.0
185.	Has sharecropped land (%)	10.7	19.2	0.0	0.9	0.5
	Average size of sharecropped land (Sharecroppers only) (mzs)	2.25	2.19	0.0	0.0	2.0

*The original computer print-out did not include all of the cases. All 373 cases have been included in thissummary. (Yupi)

TABLE I, continued

	Area/s	Oriente			Occidente	
		Quezada	Yupi	Ipala	Momos	Quiche
195.	Spends time working away (%)	46.1	42.6	28.3	77.3	50.0
210.	Listen to radio daily (%)	91.8	83.1	76.3	53.5	53.9
251.	Has toilet facilities (%)	7.7	0.8	5.1	9.5	0.5
254.	Average number of children	5.75	3.97	4.63	4.27	3.56
255.	Illiterate (%)	54.4	63.8	59.6	66.3	82.7
256.	Attended school (%)	37.4	29.1	30.1	27.5	15.9
	Average years of school attendance (attenders)	2.51	2.28	2.52	2.33	1.79

BASIC VILLAGE EDUCATION: GUATEMALA

COMPARATIVE INFORMATION

SELECTED ITEMS FROM 1974 SURVEY

Oriente: Quezada

TABLE II

	Area/s	QR	QRM	QRMA	Yupi	Q.Total
13.	Occupation: "Farmer" (%)	100.0	100.0	100.0	100.0	100.0
26.	Use hybrid seed corn (%)	7.2	1.8	3.3	0.8	3.2
45.	Average corn yield (growers only) (qq/mza)	12.4	10.9	9.8	10.8	11.0
46.	Average bean yield (growers only) (qq/mza)	9.27	9.88	8.57	6.65	8.53
99.	Use insecticides (%)	46.4	47.7	30.3	26.4	37.19
122.	Use chemical fertilizer on corn at flowering time (% using more than 1 qq/mza)	20.6	10.1	5.1	7.1	10.5
125.	Use chemical fertilizer on corn/ beans at flowering time (% using more than 1 qq/mza)	8.1	0.9	0.8	0.8	2.5
169.	Use credit (%)	28.6	17.3	17.5	10.2	18.1
174.	Visited by agronomist (%)	70.5	68.8	86.5	69.0	73.7
182.	Own land (%)	80.4	85.2	75.7	80.7	80.5
	Average size of land owned (owners only) (mzs)	3.26	3.58	3.15	2.29	3.05
183.	Rent land (%)	14.3	11.9	39.5	40.3	27.3
	Average size of rented land (renters only) (mzs)	1.81	2.08	2.20	1.68	1.93
184.	Has communal land (%)	22.4	16.5	0.0	0.0	9.2
	Average size of communal land (communal operators only)(mzs)	2.96	2.47	0.0	0.0	2.75
185.	Has sharecropped land (%)	8.1	10.1	5.0	18.6	10.7
	Average size of sharecropped land (Sharecroppers only) (mzs)	2.88	2.27	2.33	1.98	2.25

TABLE II, continued

	Area/s	QR	QRM	QRMA	Yupi	Q.Total
195.	Spends time working away (%)	50.9	38.6	40.4	44.3	46.18
210.	Listen to radio daily (%)	94.6	97.2	96.6	80.7	91.8
251.	Has toilet facilities (%)	1.8	28.4	2.5	0.0	7.7
254.	Average number of children	--	--	--	--	5.75
255.	Illiterate (%)	63.4	49.5	54.6	50.4	54.4
256.	Attended school (%)	35.7	37.6	37.8	38.9	37.4
	Average years of school attendance (attenders)	2.25	2.76	2.68	2.37	2.51

Evaluation Report
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BASIC VILLAGE EDUCATION: GUATEMALA

COMPARATIVE INFORMATION

SELECTED ITEMS FROM 1974 SURVEY

Oriente: Yupi

TABLE III

	Area/s	Y1	Y2	Y3	YTotal
13.	Occupation: "Farmer" (%)	99.1	100.0	100.0	99.7
26.	Use hybrid seed corn (%)	0.9	3.1	0.8	1.6
45.	Average corn yield (growers only) (qq/mza)	8.51	12.69	9.90	10.45
46.	Average bean yield (growers only) (qq/mza)	7.32	6.64	6.76	6.88
99.	Use insecticides (%)	20.2	31.0	20.6	24.1
122.	Use chemical fertilizer on corn at flowering time (% using more than 1 qq/mza)	2.7	9.1	4.0	5.4
125.	Use chemical fertilizer on corn/ beans at flowering time (% using more than 1 qq/mza)	0.0	0.8	0.8	0.5
169.	Use credit (%)	8.9	9.1	9.6	9.1
174.	Visited by agronomist (%)	16.7	30.1	62.7	37.0
182.	Own land (%)	57.1	73.0	77.8	69.6
	Average size of land owned (owners only) (mzs)	2.57	2.56	2.44	2.52
183.	Rent land (%)	61.5	21.9	47.7	42.6
	Average size of rented land (renters only) (mzs)	1.95	1.84	1.80	1.87
184.	Has communal land (%)	4.5	0.0	0.0	4.5
	Average size of communal land (communal operators only)(mzs)	3.7	0.0	0.0	3.7
185.	Has sharecropped land (%)	3.6	38.4	13.5	19.2
	Average size of sharecropped land (Sharecroppers only) (mzs)	3.0	2.15	2.11	2.19

*The original computer print-out did not include all of the cases. All 373 cases have been included in this summary.

TABLE III, continued

	Area/s	Y1	Y2	Y3	YTotal
195.	Spends time working away (%)	33.3	44.4	49.3	42.6
210.	Listen to radio daily (%)	81.6	82.7	85.3	83.1
251.	Has toilet facilities (%)	0.9	0.80	0.80	0.80
254.	Average number of children	3.13	4.36	4.32	3.97
255.	Illiterate (%)	83.3	54.9	55.6	63.8
256.	Attended school (%)	14.2	33.2	38.9	29.1
	Average years of school attendance (attenders)	2.33	2.39	2.31	2.28

BASIC VILLAGE EDUCATION: GUATEMALA

COMPARATIVE INFORMATION

SELECTED ITEMS FROM 1974 SURVEY

Oriente: Ipala

TABLE IV

	Area/s	I1	I2	ITotal
13.	Occupation: "Farmer" (%)	100.0	100.0	100.0
26.	Use hybrid seed corn (%)	0.7	0.0	0.4
45.	Average corn yield (growers only) (qq/mza)	9.66	10.27	9.92
46.	Average bean yield (growers only) (qq/mza)	18.3	14.2	18.0
99.	Use insecticides (%)	11.6	15.9	13.3
122.	Use chemical fertilizer on corn at flowering time (% using more than 1 qq/mza)	0.0	3.0	1.2
125.	Use chemical fertilizer on corn/ beans at flowering time (% using more than 1 qq/mza)	0.7	18.0	5.9
169.	Use credit (%)	7.2	9.0	7.9
174.	Visited by agronomist (%)	23.7	14.9	20.0
182.	Own land (%)	55.4	48.6	52.5
	Average size of land owned (owners only) (mzs)	4.05	2.11	2.73
183.	Rent land (%)	53.2	69.3	60.1
	Average size of rented land (renters only) (mzs)	2.12	2.16	2.14
184.	Has communal land (%)	0.0	1.0	0.4
	Average size of communal land (communal operators only)(mzs)	0.0	0.0	0.0
185.	Has sharecropped land (%)	0.0	0.0	0.0
	Average size of sharecropped land (Sharecroppers only) (mzs)	0.0	0.0	0.0

TABLE IV, continued

	Area/s	I1	I2	ITotal
195.	Spends time working away (%)	37.4	15.9	28.3
210.	Listen to radio daily (%)	79.1	72.3	76.3
251.	Has toilet facilities (%)	3.6	7.0	5.1
254.	Average number of children	--	--	4.63
255.	Illiterate (%)	59.7	59.4	59.6
256.	Attended school (%)	31.6	27.8	30.1
	Average years of school attendance (attenders)	2.22	3.00	2.52

BASIC VILLAGE EDUCATION: GUATEMALA

COMPARATIVE INFORMATION

SELECTED ITEMS FROM 1974 SURVEY

Occidente: Momos

TABLE V

	Area/s	Oc1	Oc2	Oc3	OcTotal
13.	Occupation: "Farmer" (%)	99.3	97.5	97.7	98.3
26.	Use hybrid seed corn (%)	0.0	0.0	0.0	0.0
45.	Average corn yield (growers only) (qq/mza)	18.5	19.3	19.2	19.0
46.	Average bean yield (growers only) (qq/mza)	6.9	5.5	3.4	5.2
99.	Use insecticides (%)	36.3	40.6	11.3	29.3
122.	Use chemical fertilizer on corn at flowering time (% using more than 1 qq/mza)	28.9	7.6	4.7	14.6
125.	Use chemical fertilizer on corn/ beans at flowering time (% using more than 1 qq/mza)	41.7	73.7	8.3	40.1
169.	Use credit (%)	28.9	25.4	20.4	25.2
174.	Visited by agronomist (%)	1.4	0.0	9.0	3.6
182.	Own land (%)	98.6	98.2	100.0	99.3
	Average size of land owned (owners only) (mzs)	1.53	3.85	1.94	2.35
183.	Rent land (%)	3.4	3.3	0.8	2.6
	Average size of rented land (renters only) (mzs)	0.0	0.0	0.0	0.0
184.	Has communal land (%)	0.0	0.8	0.0	0.3
	Average size of communal land (communal operators only) (mzs)	0.0	0.0	0.0	0.0
185.	Has sharecropped land (%)	0.7	1.6	0.0	0.9
	Average size of sharecropped land (Sharecroppers only) (mzs)	0.0	0.0	0.0	0.0

TABLE V, continued

	Area/s	Oc1	Oc2	Oc3	OcTotal
195.	Spends time working away (%)	79.9	83.9	68.4	77.3
210.	Listen to radio daily (%)	54.3	59.3	47.3	53.5
251.	Has toilet facilities (%)	0.7	3.4	24.8	9.5
254.	Average number of children	--	--	--	4.27
255.	Illiterate (%)	73.2	80.5	45.9	66.3
256.	Attended school (%)	12.1	17.8	52.7	27.5
	Average years of school attendance (attenders)	1.36	2.80	2.38	2.33

BASIC VILLAGE EDUCATION: GUATEMALA

COMPARATIVE INFORMATION

SELECTED ITEMS FROM 1974 SURVEY

Occidente: Quiche

TABLE VI

	Area/s	4	5	TOTAL
13.	Occupation: "Farmer" (%)	100.0	100.0	100.0
26.	Use hybrid seed corn (%)	0.0	0.0	0.0
45.	Average corn yield (growers only) (qq/mza)	14.40	17.79	15.82
46.	Average bean yield (growers only) (qq/mza)	2.59	2.50	2.61
99.	Use insecticides (%)	9.1	13.3	11.1
122.	Use chemical fertilizer on corn at flowering time (% using more than 1 qq/mza)	8.3	10.1	9.2
125.	Use chemical fertilizer on corn/ beans at flowering time (% using more than 1 qq/mza)	23.1	40.2	30.2
169.	Use credit (%)	9.9	16.0	12.5
174.	Visited by agronomist (%)	0.0	0.0	0.0
182.	Own land (%)	100.1	98.8	99.5
	Average size of land owned (owners only) (mzs)	1.33	1.91	1.57
183.	Rent land (%)	5.0	4.6	4.8
	Average size of rented land (renters only) (mzs)	0.5	1.25	0.8
184.	Has communal land (%)	0.0	0.0	0.0
	Average size of communal land (communal operators only)(mzs)	0.0	0.0	0.0
185.	Has sharecropped land (%)	0.0	1.1	0.5
	Average size of sharecropped land (Sharecroppers only) (mzs)	0.0	2.0	2.0

TABLE VI, continued

	Area/s	4	5	TOTAL
195.	Spends time working away (%)	41.3	62.0	50.0
210.	Listen to radio daily (%)	57.9	48.2	53.9
251.	Has toilet facilities (%)	0.0	1.1	0.5
254.	Average number of children	3.55	3.56	3.56
255.	Illiterate (%)	85.1	79.3	82.7
256.	Attended school (%)	14.0	18.2	15.9
	Average years of school attendance (attenders)	2.06	1.50	1.79

APPENDIX V

BASIC VILLAGE EDUCATION

GUATEMALA

EVALUATION REPORTS

Working Paper No. 1

THE GENERAL CHARACTERISTICS OF SUBSISTENCE FARMERS IN THE DEPARTMENT OF JUTIAPA, GUATEMALA

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The Basic Village Education Project is jointly funded by the Government of Guatemala and the United States Agency for International Development in accordance with terms of an agreement between the two governments. It is administered in Guatemala by the Guatemalan Ministry of Education, and USAID provides foreign personnel and other assistance through a contract with the Academy for Educational Development. Responsibility for an independent evaluation of the Project rests with the University of South Florida through a sub-contract with the Academy for Educational Development.

UNIVERSITY OF SOUTH FLORIDA

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THE GENERAL CHARACTERISTICS OF SUBSISTENCE FARMERS

IN THE DEPARTMENT OF JUTIAPA, GUATEMALA

Subsistence farmers are the target population for the experimental program called Basic Village Education. To select an area and a population for interviewing it was necessary to decide on the characteristics of subsistence farmers. They have been characterized in the following way:

1. Use subsistence form of agriculture.
2. Live in a cluster of houses, from a few hundred to a few thousand people.
3. Have greater self-sufficiency than farmers in industrial states but dependent on cities for special goods.
4. Sell some surplus production for cash.
5. Are ambivalent towards the city in that they need goods but have fear of exploitation.
6. Are bound by traditional values and custom.
7. Are on the average, illiterate.
8. Have low levels of educational attainment.
9. Follow regional patterns of diet, home use of remedies, and use of local practitioners.
10. Are not productive farmers in terms of the national economy.*

The Quesada valley was chosen as an experimental area because the farmers meet the criteria. The list used for selection of those to be interviewed contained only farmers who were farm operators on small holdings (from 0.5 to 12.0 manzanas; 1 manzana = 1.7 acres). Because of the nature of the farming and life in the area, the other characteristics were assumed to be closely related.

The following pages give a brief description of those interviewed in the base-line study. This is a descriptive summary of the general cultural characteristics of the farmers and not specifically of the agricultural practices. A summary of the agricultural practices is the subject of separate report although some related aspects are included here.

The typical subsistence farmer found in this survey area owns about 3.5 acres and makes his own decision on farming. The family consumes most of the corn grown, but may sell some beans for cash. The farmer is probably illiterate and attended school less than one year, if at all. He wants more education for his children and believes school may increase income. His four children living and his wife complete the family. They live on dirt floors, with adobe walls and a tiled roof. They use wood for cooking, kerosene for light, rivers for water and banana patches for toilets.

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*Arensberg and Niehoff, Introducing Social Change, Chicago: Aldine-Atherton, 1971.

Because of the nature of the experiment, the total survey area is divided into four sub-areas. There are three sub-areas in the Quesada Valley called A, B, and C and a control area in nearby Yupiltepeque (Yupi). There are some variations in the sub-areas and they will be described when the differences are great. The actual tabulation summaries are included at the end of the report for further reference. Eleven major divisions are used: Subsistence Characteristics; Education; Age and Family Characteristics; Housing; Health and Nutrition; Patterns of Affiliation; Mobility; Information Sources; Attitudes Toward Wealth, Respect and Friendship; Occupational Variations; and Credit Use and Risk Taking.

Subsistence Characteristics.

1. Farm Size (9). The pre-interview sample selection proved to be accurate in terms of farm size. Almost one-half of the farmers had two manzanas (approximately 3.5 acres) or less in their holdings. Slightly less than half had farms between three and six manzanas (approximately 5-10 acres). There were only about 10% of the farms that were seven manzanas or over (approximately 12 acres or more).

The size of farms varied slightly in the different sub-areas. Yupi had the largest proportion of very small farms and Quesada A had a slightly higher proportion in larger farms.

2. Land Tenure (10). Most of the farmers own their land (57.5%) and a few rented additional land. There were a few (9.3%) that rented all of their land.

Farm ownership is higher in Quesada A (72.0%) than the other sub-areas. Rented land is more common in Quesada B (16.5%) than the other sub-areas but still not nearly as prevalent as ownership. Communal land is more common in Quesada C (17.6%) than in the other sub-areas.

3. Decision Making (11). Of the 506 farmers interviewed, 501 said that they made all of the decisions related to their farms. All of the sub-areas were the same in this respect.

4. Disposition of the Crops (19-240-241-242). A large proportion of the production of subsistence farming is consumed by the farm family. Most of the farmers (75.7%) consumed all of their corn and only a few (10.0%) sold even half of the crop. More of the farmers sold part of their corn crop in Quesada C than in the other sub-areas.

Beans are sold more often than corn. Almost half of the farms sell at least half of their crop yet over one-third (37.0%) consume the whole crop themselves. The farmers were asked this question before the beans were completely harvested and again later in the year. There were variations in the responses given. At the later date more indicated that they had not sold any beans.

Not all of the farmers plant sorghum, but for those who do it is generally used for home consumption.

Educational Characteristics.

5. Literacy (12). The reported literacy rate was slightly over 40% or 207 of the 506 indicating that they could read and write. Quesada A had the highest rate (45.8%) and Quesada C had the lowest (36.1%).

6. School Attendance (128). The proportion of those who had attended school (41.3%) is very close to the literacy rate. The variations by sub-area do not follow the same order as in literacy. Quesada A has the highest reported literacy but does not have the highest reported school attendance. Quesada C has the lowest reported literacy but does not have the lowest reported school attendance.

7. Schooling Completed (129). As expected, low educational levels were found. A majority (65.2%) reported that they had not even completed one year of schooling. Only 13.1% had completed three or more years and slightly less than that proportion reported finishing first grade and the same for second grade.

8. Desired Education for Children (130). The number of responses favoring education for their children was much higher than the educational attainment of the farmers. Almost all (90%) felt that at least two years was desirable and more than half felt that six years of schooling was ideal.

9. Perceived Relation of Schooling to Income (74). Most farmers believed that schooling did help to increase one's income (68.4%). About one-fourth (25.7%) saw no relationship between schooling and income.

Age and Family Characteristics.

10. Age (126). The average farmer interviewed was in his early forty's. The farmers in Yupi and Quesada C were slightly younger than this and those in both Quesada A and B were older. Age range was from 17 to 82 years.

11. Family Size (127). The average family reported has slightly over four children. Almost half of all interviewed have from three to six children. One-fourth of the families have two children or less and approximately 28% of the families reported seven or more children.

The families in Yupi are slightly smaller than the other three sub-areas.

Housing Characteristics.

12. House Ownership (100). Most (79.6%) of the farmers own their own homes rather than renting or some other arrangement. There are no great differences between the sub-areas in this respect although Yupi is slightly lower than the others.

13. House Construction (101-102-103). Most of the houses had a tile roof (70.4%), adobe walls (69.6%) and dirt floors (93.9%). There were also many thatched roofs (27.5%) and plaster walls (24.9%) but little variation in the floor material.

In sub-areas Quesada A and C there were a higher proportion of tile roofs than the other two areas where many more thatched roofs were found. This same grouping of sub-areas was noted in respect to adobe vs. mud-plaster walls.

14. Facilities (105-106-107). Almost all of the farmers (99.2%) used wood for cooking, kerosene lamps for lighting (89.1%), rivers or springs for water (65.0%) and had no toilets of any kind (77.4%).

There were some variations between the sub-areas in respect to these items. Quesada B had access to more electricity for lighting (12.0%). Quesada B and Yupi had more water faucets in the home (26.3% and 12.1% respectively) although all areas indicated that wells were used in about 12% of the cases; and Quesada A had the highest proportion of toilets (outdoor privy, 39.0%).

Health and Nutrition.

15. Family Health (111). Most farmers did not feel that they had more sickness than their neighbors. About one-fifth of the farmers felt that they had more illness than other families. Sub-areas Quesada B and C both reported higher in this aspect than did the other two.

16. Dental Care (112). Less than half (40.5%) of the families use a tooth brush for cleaning their teeth. This health practice is even lower in Yupi (27.2%).

17. Diet (113-114-116-117-118-119-120-121-122-123-124-125). In addition to tortillas, beans, and coffee which are used daily in all of the homes, there are a number of other foods that are included in the diet.

Bread is eaten at least weekly in almost two-thirds of the homes and daily in 28.3% of the homes. It is more common in Quesada A and least in Yupi.

Cheese also is eaten at least weekly in over 60% of the homes and as often as daily in 28.5% of the homes. It is more common in Quesada C and least in Yupi.

Meat is included in the diet at least weekly in over half (56.3%) of the homes. An additional 21.5% reported that they used it sometimes but a large number (38.3%) do not consider it a part of the diet at all. It is used more in Quesada C than any of the other three sub-areas.

Rice is included in the diet at least weekly in almost half (46.1%) of the homes but very few (8.9%) use it daily. It is more common in Quesada C than the other sub-areas.

Milk is used in about one-fourth of the homes daily (26.3%) and that many again (27.9%) use it on a weekly basis. Almost one-third (31.8%) do not consider it a part of their diet at all. Milk is much more common in Quesada A and C and is used considerably less in Yupi (46.3% do not use milk at all).

Lard and oil are used in the diet at least weekly in two-thirds of the homes (68.5%) and almost one-third (29.6%) use them daily. Only a few (14.4%) do not use them at all. Quesada A and C use these items more than the other sub-areas but the variation is not as great as with other dietary items.

Butter or margarine is used in the diet at least weekly in one-half of the homes (49.4%) and as often as daily in one-fifth of the cases. Over one-third (36.4%) do not use them at all. Quesada A and C use these items more than the other sub-areas and Yupi is considerably apart in this characteristic.

Very few families use vegetables as part of the daily diet but they are included at least once a week by one-third (37.8%) of the respondents. A like proportion (37.7%) do not use them at all. Quesada A and C use these items more than the other two sub-areas.

Cooking bananas are not an important dietary item in any of the sub-areas.

Information Sources. (75-76-77-78-79-80-81-82-83-84-85-86-87-88-89-90-91)

18. Friends and neighbors are reported as the best source of agricultural information by more than half of the farmers (57.5%). There were no great variations in response between the sub-areas in this respect.

Less than half of the respondents (40.5%) gave the specific name of a person that they went to for information or help in solving a problem. This proportion was even smaller in the sub-areas of Quesada B and Yupi.

Only one-fourth (23.9%) of the farmers considered agronomists as the best source of agricultural information. There was considerable variation in this response between the sub-areas. In Quesada C, almost half (44.5%) felt that the agronomist was the best source, while in Yupi 24.3%, in Quesada A 19.5% and in Quesada B only 9.0% felt this way.

Very few farmers considered newspapers and magazines as the best source of agricultural information. There was little variation between the sub-areas in this respect.

Very few farmers considered either the teacher or the storekeepers as the best source of agricultural information. There was little variation between the sub-areas in this respect.

Almost half of the farmers considered radio as one of the best sources of agricultural information (45.8%). This same proportion usually have a radio for their own use and an additional 30% have access to a radio belonging to friends or relatives. Most of those who have their own radios have little trouble getting batteries. There is some variation between sub-areas in radio access. Quesada A has more access (83.1%) and Yupi with less than any of the others (71.3%).

Early morning and afternoon are the most frequently mentioned listening times. Approximately two-thirds (63.6%) of the respondents listen at either or both of these periods. There are few variations between sub-areas in this pattern. A number of respondents rely on radio information given to them by friends and family who listen at other times.

The most widely listened to station is Radio Jutiapa. The news is preferred by half (53.2%) of the respondents and educational programs by 21.2%.

In addition to radio and other information sources, correspondence by ways of letters is used by two-thirds of the respondents at least a few times during the year. It is less common in Yupi but there is little variation in the other three sub-areas.

Patterns of Affiliation.

19. Group Membership (14). Less than one-fifth (19.6%) of the respondents are members of organized community groups. Only Quesada C shows any great variation and there the proportion reaches over 30%.

20. Friendship Patterns (92 - 93). Most of the farmers (91.9%) had at least three close friends. There were no great variations in friendship patterns between the sub-areas.

Most of the farmers also indicated that it was important to discuss agricultural and other community problems with these friends. This was the same in all sub-areas.

Mobility (95-96-97-98-99).

21. Over half of the farmers (59.3%) visit the nearby village at least once a week. Yet, less than one-fourth of them (21.1%) visit the regional center that often and almost none (1.2%) visit Guatemala City weekly. On a monthly basis the proportion of those visiting the local village are 75.1%, the regional town, 42.6% and Guatemala City 9.9%.

There are a lower proportion of weekly visits to the local village in Quesada B; a lower proportion of weekly visits to the regional town in Yupi; and a higher proportion of those in Yupi who have never visited Guatemala City at all.

Most of the farmers have traveled outside their local province and some even outside of Guatemala (7.5%). At least half of the respondents would like to take a trip to Guatemala City or beyond.

Attitudes Toward Wealth, Respect and Friendship (108-109-110).

22. Most of the farmers felt that wealth was important (75.1% "yes" plus 10.9% "possibly"). At the same time a like proportion (76.3% "yes" plus 8.3% "possibly") indicated that friendship is more important than wealth. The importance of friendship over wealth was even more pronounced in Yupi than the other sub-areas. All areas also indicated that a person could be poor and still respected.

Occupational Variations.

23. Other Jobs (65-66-67-68-69-70-73-259-260-261). Many of the farmers leave the area for a few weeks to work as laborers on larger farms (36.0%). Most of them are gone about four weeks and a few even stay eight weeks or longer. The peak month for outside work is in November for Yupi, in December and February for Quesada C, and in January for both Quesada A and B.

Almost all (98.6%) indicated that they had always been farmers and most (64.4%) said they would choose farming if they could choose any job they wanted. For those that would choose another job, 18.4% indicated they would choose to be a mechanic, mason or carpenter. More of those this category in Quesada A than in the other sub-areas.

The response to the questions concerning recommended jobs for youth followed the same patterns as those of personal job choice. They were even more positive in views as to the future in farming.

24. Wages (71-72). Most of the respondents agreed that the present daily wage was between 50 and 59 cents/day (49.8%). There was less agreement on the desirable wage (100-109 cents/day = 36.0%; 80-89 cents/day = 21.9% and 70-79 cents/day = 12.8%). Both Quesada C and Yupi responded with higher wage aspirations than the other two sub-areas.

Credit Use and Risk Taking (60-61-62-63).

25. Only about one in five (19.8%) of the farmers used credit of any kind last year. About half of those who did use credit, used a commercial agency as their source. BANDESA was used more than any other commercial source.

Although most farmers did not use credit it was not because they felt that it was extremely difficult to obtain (only 38.9% felt this to be true). On the other hand very few felt that it was easy to obtain credit (12.5%).

The most often mentioned requirement to borrowing money was land ownership (32.4%), then a good credit record (10.0%) and a few mentioned the crop as a guarantee (6.0%).

In Quesada C credit is used more than in the other sub-areas with land ownership as the most important requirement. There is a higher proportion of respondents in this sub-area that also feel credit is easy to obtain.

In Quesada A the proportion that borrowed money was lower than in any other area. The tendency here was to borrow from friends and relatives.

SUMMARY

The farmers in the Department of Jutiapa that were chosen for interviewing meet most of the characteristics of subsistence farmers in other parts of the world. They operate small farms which they own themselves and make all the decisions related to production. Their production is limited to a few basic crops (corn and beans with some sorghum) that is for home consumption. Their diet includes a few other items that are usually purchased once a week on a visit to the village or regional marketing center. Travel is limited to these market trips except for a yearly trip to Guatemala City, to the coast for seasonal work to supplement the family income, or to a religious center.

The educational levels are low and most are not literate. New information comes by way of friends and neighbors or radio except for the few who have had contact with agricultural technicians.

The homes are owned and of simple construction. Tile roofs, adobe walls and dirt floors predominate. Sanitary facilities and assurance of pure water are lacking.

These farmers have high educational aspirations for their children and would still choose to be farmers if they had their choice of other jobs.

APPENDIX VI

WORKING PAPER NO. 2

THE AGRICULTURAL CHARACTERISTICS OF SUBSISTENCE FARMERS IN THE DEPARTMENT OF JUTIAPA, GUATEMALA

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FEBRUARY, 1975

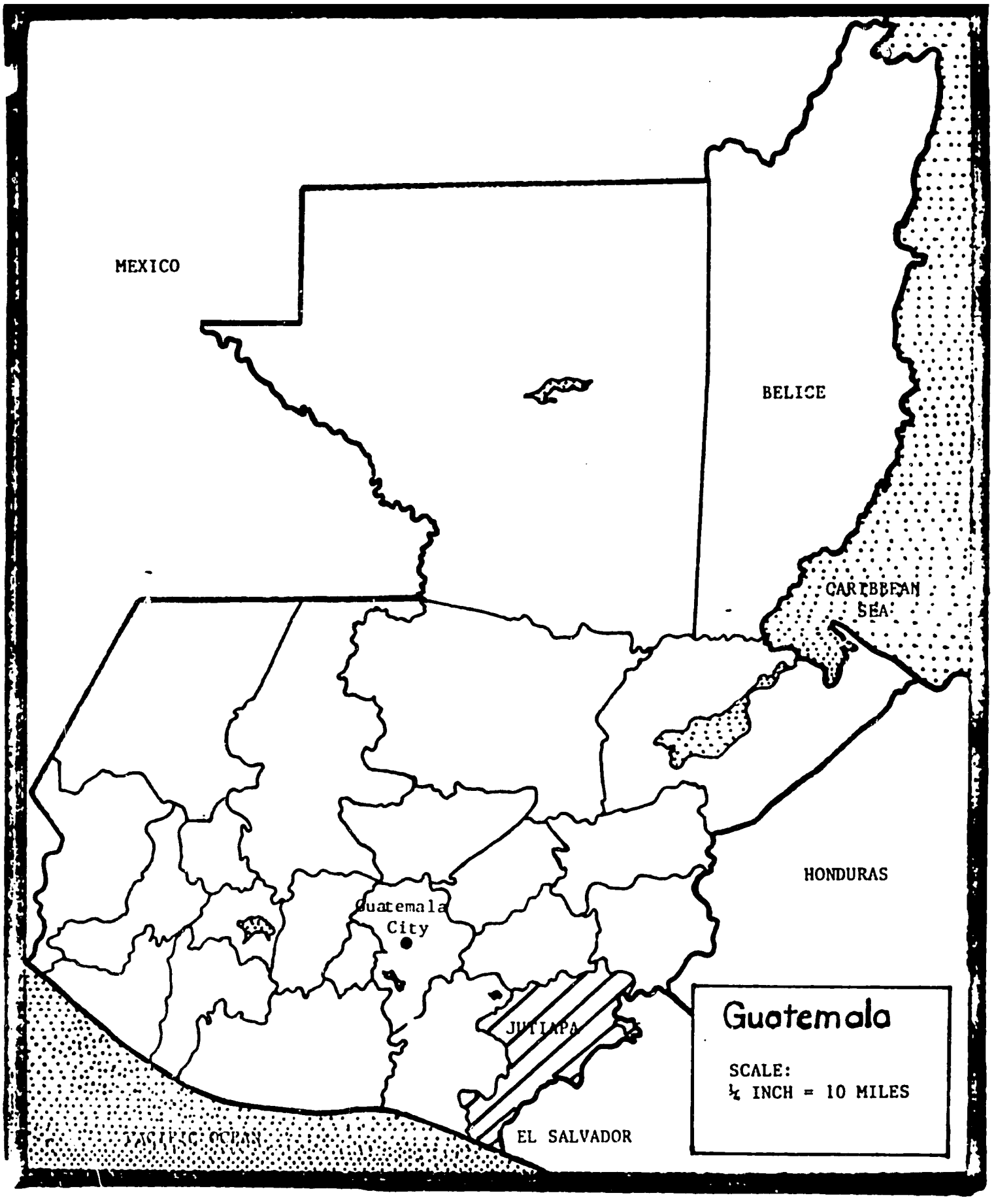
MEXICO
BELICE
CARIBBEAN SEA
HONDURAS
Guatemala City
JUTIAPA
EL SALVADOR
PACIFIC OCEAN
Guatemala
SCALE:
½ INCH = 10 MILES

FIGURE I

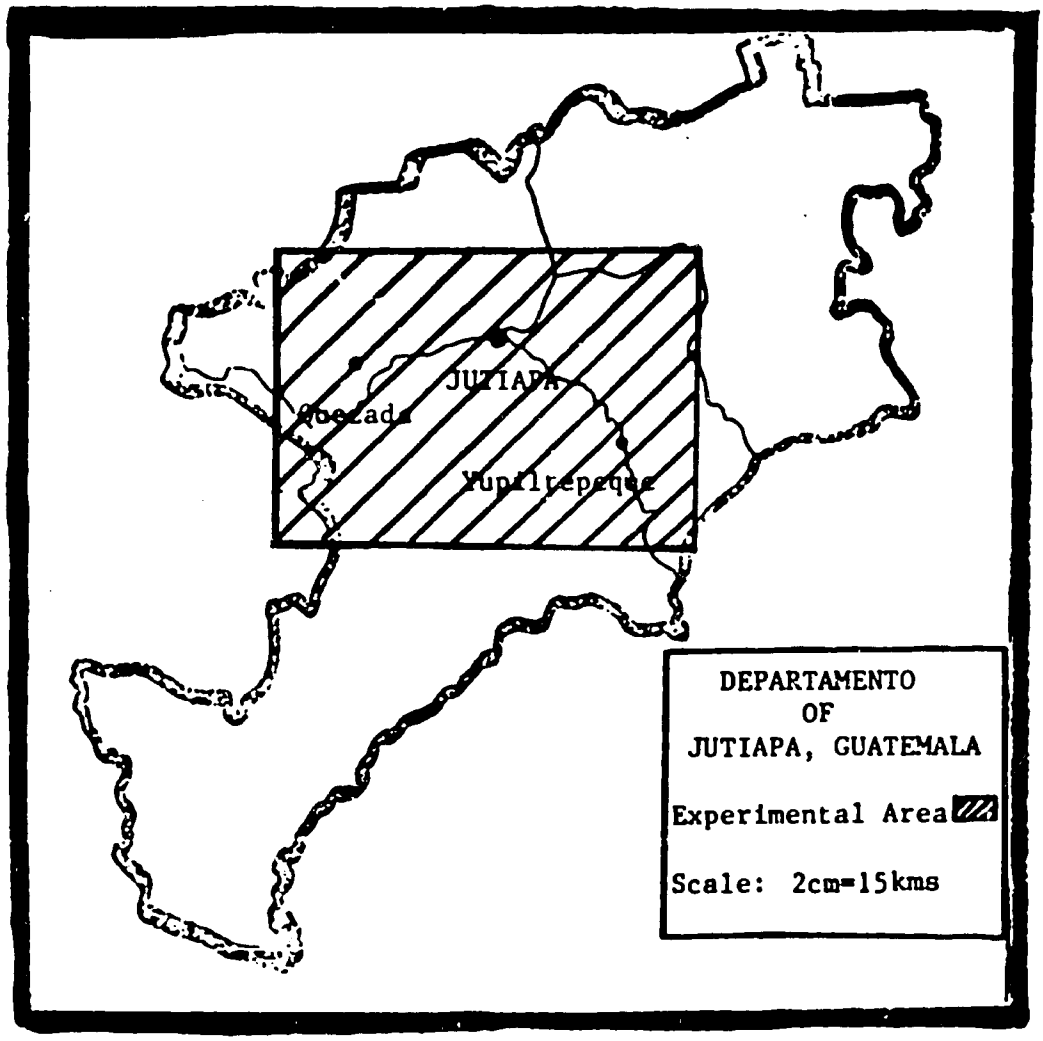

FIGURE II

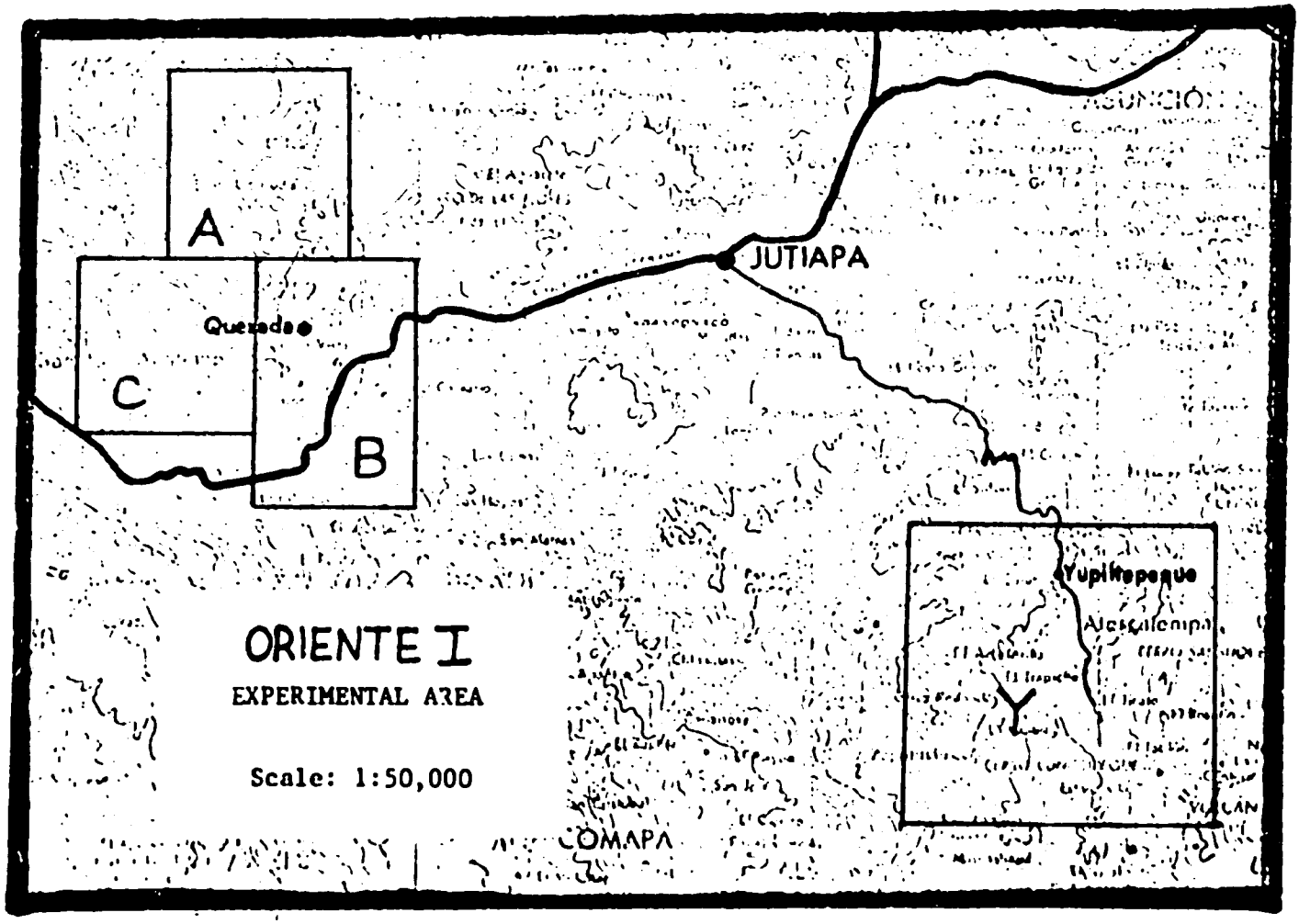

FIGURE III

SUMMARY

The following summary statements are very general in nature but will serve to give a brief profile of the agricultural characteristics of the subsistence farmers in the Department of Jutiapa in southeastern Guatemala.

1. The land holdings are small (6.7 acres) and usually owner operated. They are fragmented into several pieces and often at some distance from each other. Most of the land is useable for cropping and the farmers feel that it is good land but could be more productive.
2. The cropping system common to the area includes corn as the most important crop followed by beans and sorghum. Tobacco, rice, vegetables or other crops are planted but only in some regions. Beans are usually planted with either corn or sorghum and a second crop is often planted after the first one is harvested. The farmers are generally optimistic about the yields.
3. As to specific crops, corn is planted by everyone with an average area of 1.9 manzanas (3.2 acres) and an average yield of approximately 15 qq/mza (9 cwt/acre) in 1973; beans are planted by most farmers also with an average area of 1.14 manzanas (1.9 acres) and an average yield of .65 qq/cda (6.1 cwt/acre) in 1973; and sorghum is planted but not as common as corn or beans with an average area planted of 1.5 manzanas (2.6 acres) and average yield of 15 qq/mza (9 cwt/acre) in 1973.
4. Land preparation for planting is usually done by hand although slightly over half of the farmers do use oxen for plowing. Very few have used tractors. A few of the farmers have their own oxen. Horses are common but are not used in field labor. There are a few mules in the area but they are used for transportation, much as the horses.
5. Seeds are most often selected from the prior year's harvest. Due to an apparent misunderstanding of the nature of hybrid corn seed, most farmers are planting a degenerated hybrid variety. Many are also planting selected native corn seed. A small percentage (10%) are planting purchased seed that is a true hybrid and/or certified.
6. Fertilizers were used by half of the farmers in 1973. The amounts used were usually less than 2 qq/mza (1.2 cwt/acre) and of an incomplete formula type.
7. Insect damage was reported by many of the farmers although only half of those reporting used insecticides The insecticides were usually used on corn.
8. Plant diseases are not commonly known by name but one-half of the farmers reported problems. Only a few have used chemicals for disease control and this was mostly for seed treatment.
9. Weed control is not seen by the farmers as a great problem. Chemical weed killers are used by very few but most farmers do hill and cultivate by hand.

10. Grains are stored for home use in tanks (corn and sorghum) and/or sacks (beans). Beans are sold more often than corn or sorghum and the sale is to truckers who come into the neighborhood. Price information is obtained from neighbors or by inquiring in town. The three basic grains are also purchased during the year by more than half of the farmers.
11. Technical assistance was reported by one-third of the farmers but the agency could not usually be identified There was wide agreement that future help was desired and requested before the planting season begins.
12. Recent changes in planting methods were reported by one-third of the farmers and they felt that these changes had helped to increase yields and income.
13. One-third of the farmers also do outside work to help supplement their income. They leave the community sometime between November and February (most in January) and most often go to the southern coast to work.

All four of the sub-areas were chosen because they were as much alike as possible in all of the characteristics mentioned above. All available data was examined as well as visits to the area to observe and talk with local people. The baseline survey confirms that the sub-areas were well chosen in their similarity. Nonetheless, there are some differences between the sub-areas that must be acknowledged. The outstanding variations of each sub-area are summarized in the following statements.

1. The farmers in Quezada A reported a higher proportion of land ownership than the other sub-areas. Although not greatly different from the other sub-areas, larger farm size, greater area planted to corn, greater area planted to rice, and more use of mules were reported by these farmers.
2 The farmers in Quezada B reported lower corn yields than the other sub-areas and lower application rates of fertilizer on corn and generally lower levels of use. This sub-area reported fewer visits by agricultural technicians although their desire for such visits is greater than the others. More farmers from Quezada B work away in January than the other sub-areas.
3. The farmers and farms in Quezada C, as compared to the other sub-areas, are outstanding in many ways reporting high in land preparation methods, in the use of fertilizer, in the use of insecticides, in the amount of technical help available, in recent agricultural method changes and in resulting yields and income from changes. More tobacco is planted although rice is much less common.
4. Yupi was chosen as a control area after considering a number of other possible locations. Because of the experimental design it was necessary to isolate the control area from the three treatment areas for radio broadcasting. In doing this, a number of variations in both natural and cultural environment were introduced. Some of these are reflected in the data summarized in this report. The farmers and farms in Yupi as compared to the other sub-areas are smaller in size, the corn plantings are smaller, land is not plowed as often before planting nor are oxen used as much as in

the other sub-areas. Corn is hilled considerably less often, and insecticide use is not as common. There is less participation in the market, both in selling grains as well as buying for consumption. Seed corn, in particular, is more often of the degenerated hybrid variety that comes from the previous crop. In contrast to this, fertilizer use is common (although of partial formula) and chemical weed killers are used more often.

All of the material in this paper and in Working Paper No. 1 are of descriptive nature and will serve to give a profile of the subsistence farmers of Jutiapa at the time the Basic Village Education Project was initiated. They will be used as a point of comparison as the project continues and as other experimental areas are incorporated. The baseline data from these reports will serve as the standard for measurement of change in agricultural practices throughout the project and will be subjected to intensive statistical analysis.

APPENDIX VII

INNOVATIVENESS AMONG SUBSISTENCE FARMERS IN GUATEMALA

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The Basic Village Education Project is jointly funded by the Government of Guatemala and the United States Agency for International Development in accordance with terms of an agreement between the two governments. It is administered in Guatemala by the Guatemalan Ministry of Education, and USAID provides foreign personnel and other assistance through a contract with the Academy for Educational Development. Responsibility for an independent evaluation of the Project rests with the University of South Florida through a sub-contract with the Academy for Educational Development.

INNOVATIVENESS AMONG SUBSISTENCE FARMERS IN GUATEMALA

Introduction

There is a convergence of many disciplines and theoretical perspectives in the area of knowledge classified today as "the diffusion of innovations." From an anthropological view, the diffusion of cultural traits has long been recognized as a major explanation of behavior. From a psychological perspective, the role of socialization in attitude formation and behavior change have been the basis for many studies. Sociology has been concerned with social change and the effect of social organization in motivating or preventing change. At applied levels, educators interested in the conditions most conducive to teaching and learning, have tried to combine all of the theories and empirical knowledge related to individual and group behavior from the traditional disciplines. This is particularly true for those interested in non-formal education. When this educational enterprise is directed at farmers with the goal of communicating the results of scientific technology and thereby increasing agricultural production, rural sociologists are able to make a major contribution (Wilkening, 1958:97-102).

The Extension Service of the United States Department of Agriculture is a good example of this convergence and its application. Program evaluation and investigation were important aspects of this program from the very beginning. The process of communication was emphasized in the early investigation. The results of thirty years of experience are summarized by Wilson and Gallup in Extension Teaching Methods (1955). Although the early writings emphasized teaching methods and the learning process, there was also a recognition of the characteristics of the learner and the educational setting. Wilson and Gallup studied such characteristics as age, educational level, size of farm, socio-economic status, and land tenure.

Other studies went further to emphasize both individual and societal characteristics as important variables in the transfer of rural technology. At the macro level, standard categories used by demographers to describe a population were used. At the micro level such items as value orientation and personality types were used to explain why some farmers were more ready recipients of new ideas. In the resulting synthesis, both the process of adoption and the characteristics of adopters are considered as necessary variables in the study of the transfer of rural technology. The works of Bohlen and Beal (1957), Lionberger (1960) and Rogers (1962) have served an important function in combining the theories and practical experience from divergent sources under the title of "the diffusion of innovations."

The early work in the United States was used as a base for the development projects all over the world following the second world war. At the same time that these new projects were using the results of past diffusion studies, additions were being made to the basic knowledge on the subject. A number of these studies were done in a Latin American setting (Deutchmann and Fals Borda, 1962; Herzog, et.al., 1968; Feaster, 1968; etc.) and some in Guatemala (Lassey, 1966; Beal and Sibley, 1966; etc.). In the recent inventory of studies on the diffusion of innovation (Rogers and Shoemaker, 1971), more than 1500 studies have been listed and categorized. A significant proportion of these are focused on societies that are in the process of development or modernization.

The traditional model of diffusion of innovations uses a classification of five adopter categories: "innovators," "early adopters," "early majority," "late majority" and "laggards" (Rogers and Shoemaker, 1971:187). This classification has been developed after a great deal of research and the characteristics of the individuals that fit in each class have been verified

repeatedly. The innovator has been classified as "venturesome" in his approach to new ideas and practices, representing approximately 2.5% of the population. The early adopters is best characterized as "respectable" and accounts for approximately 13.5% of the population. The early majority are "deliberate" in their adoption of new practices and include approximately 34% of the population. The late majority are seen as "skeptical" and much more cautious of the changes that they accept. This also includes 34% of the population. The laggards are classified as "traditional" in their outlook and practices. They are reluctant to change and represent 16% of the population.

When this model is applied to a large sample of adopters, such as the farmers of a given county or state, there is enough diversity so that the individual farmers can be grouped and classified by these five categories. When the sample is smaller or the group more homogeneous, the specific categories may not be as useful. This is particularly the case when studying the relative innovativeness of subsistence or peasant farmers. It is quite likely that standard criteria would place all of them in the laggard or, at the very most, late majority group and not distinguish those that are more innovative than the others.

A more useful model for studying subsistence farmers is to be found as innovativeness is compared with the key characteristics of socio-economic status, personality, and communication behavior (Rogers and Shoemaker, 1971, p. 185). A series of generalizations have been compiled by the Diffusion Documents Center at Michigan State University to serve this purpose. These will be used as standards of comparison in this study much as a series of hypothesis or expected findings.

Data Collection and Analysis

The data for this study was gathered as part of a project in nonformal educations in a Spanish-speaking area in Guatemala. Valleys were selected

in which the majority of the population were subsistence farmers. The selection was based on four fundamental characteristics: low levels of literacy, decision-making control over land used for farming, small farms (from .5 to 12.0 manzanas, one manzana = 1.72 acres) and part or most of the main crop consumed by the farm family.

The particular areas were selected by combining the available information from the census of population of 1964 and unpublished data from the census of population of 1972. In addition, reconnaissance surveys were made by repeated field visits to a number of areas that seemed to meet the desired characteristics of subsistence farming.

Five-hundred-six farmers were selected for interviewing in the fall of 1973 while the cropping year was still in progress. The questionnaire had 130 items including basic demographic data, communication patterns, educational levels, patterns of affiliation, level of living indicators, and agricultural practices. A follow-up questionnaire was also used to determine agricultural practices in further detail and crop yields. Further studies will be made over a period of three years but these are not included in the present study.

A multi-stage sampling technique was used in selecting the subjects for interviewing. A master list of names was prepared by purposive selection of the area, the villages within the area and the size of farms (all of those whose farms were between 0.5 and 12.0 manzanas in size). If the number of farmers meeting these requirements was 30 or less then all available were interviewed. If there were over 30 then they selected at random with additional names selected for alternates.

The data was tabulated so that the villages could be compared as well as the four sub-areas. Simple correlations were run on selected variables to test the relationship of agricultural practice innovation and other characteristics of the individual farmers.

There are seven items that are used as dependent variables to measure innovativeness. An eighth item (corn yields) is included also for it serves as a measure of the result of innovativeness. Positive correlations were

(SEE TABLE 1)

found between corn yields and all seven of the other items; use of improved seed ($r = .204$; $p = .001$), amount of fertilizer used ($r = .407$; $p = .001$), type of fertilizer used ($r = .241$; $p = .001$), use of insecticide ($r = .256$; $p = .001$), changes in planting method ($r = .303$; $p = .001$), land preparation methods ($r = .210$; $p = .001$), and use of credit ($r = .213$; $p = .001$).

The list of items used as measures of innovativeness are as follows:

1. Use of improved seed (includes selected native as well as hybrid and certified).
2. Use of recommended amount of fertilizer.
3. Use of recommended type of fertilizer.
4. Use of insecticide.
5. Recent changes in planting methods.
6. Land preparation methods (animal or tractor power vs. hand).
7. Use of credit.
8. Corn yields.

The independent variables are taken from the following list of characteristics of adopters as presented by Rogers and Shoemaker (1971:185-196):

> The relatively earlier adopters in a social system tend to have more education, a higher social status, more upward social mobility, larger units, a commercial rather than a subsistence orientation, a favorable attitude toward credit, and more specialized operations. Earlier adopters also have greater empathy, less dogmatism, greater ability to deal with abstraction, greater rationality, and more favorable attitudes toward change, risk, education, and science. They are less fatalistic and have higher achievement motivation scores and higher aspirations for their children. Earlier adopters have more social participation, are more highly integrated with the system, are more cosmopolite, have more change agent contact, have more exposure to both mass media and interpersonal channels, seek information more, have higher knowledge of innovations, and

TABLE I SOCIO ECONOMIC CHARACTERISTICS

	Innovation Items							
Socio Economic Characteristics	Corn Yield (22)	Corn Seed Type (23)	Amount of Fertilizer (30)	Type of Fertilizer (31)	Insecti-cide Use (35)	Planting Method Change (39)	Land Preparation Methods (49)	Use of Credit (60)
Corn Yield (22) *		0.2041 0.001	0.4066 0.001	0.2411 0.001	0.2559 0.001	0.3029 0.001	0.2091 0.001	0.2126 0.001
Age (126)	-0.0115 0.398	0.0564 0.103	-0.0557 0.106	-0.0881 0.023	-0.0638 0.076	-0.307 0.245	-0.0319 0.237	-0.0171 0.350
School Attendance (128)	0.0571 0.100	-0.0106 0.406	0.0059 0.448	-0.0109 0.403	0.0656 0.070	-0.0060 0.446	0.0942 0.017	0.0183 0.341
School Completed (129)	0.1251 0.002	0.0612 0.084	0.0534 0.115	0.574 0.099	0.0836 0.030	0.0164 0.356	0.1220 0.003	-0.0539 0.113
Literacy (12)	0.1156 0.005	-0.0163 0.357	0.0793 0.037	0.1019 0.011	0.0660 0.069	0.0960 0.015	0.0892 0.022	-0.0029 0.421
Size of Farm (9)	0.2485 0.001	0.0806 0.035	0.1963 0.001	0.0886 0.023	0.1403 0.001	0.1825 0.001	0.1937 0.001	0.0982 0.014

* Item numbers in questionnaire

have more opinion leadership. They usually belong to systems with modern norms and to well integrated systems.

A number of generalizations related to the above list have been selected for analysis. These generalizations have been divided into three groups: socio-economic characteristics; attitudes, perceptions and aspirations, and communication behavior. The three groups are treated separately in the following paragraphs.

Socio-Economic Characteristics. There are a series of characteristics that are listed in the literature under this heading (Rogers and Shoemaker, 1971: 185-6). These include: age, education, social status, social mobility, size of farms, use of credit, degree of commercialization and degree of specialization. Only age, education, and farm size are included in the present analysis (see Table 1). These are discussed in the following paragraphs.

1. Age. This is represented by the stated age of the individual.

"Innovativeness is not related to age."

a. There was no significant correlation of age with any of the eight items.

Contrary to popular belief, older farmers are not necessarily more traditional and conservative. It is quite likely that only those that have been farming for a number of years have the resources (including experience) to try out new methods. It may be for this reason that the respect for tradition that generally comes with age is offset by the increased allowable margin for risk.

2. Education. This is represented by the stated ability to read and write, the reported number of years of school attended, and the reported grade completed.

"Innovativeness is related to literacy."

a. A low positive correlation was found between literacy and corn yields ($r = .116$; $p = .005$). There was no significant correlation with any of the seven remaining items.

"Innovativeness is related to the number of years of school attended."

a. There was no significant correlation of number of years of school attended with any of the eight items.
b. Low positive correlations were found between number of years of school completed and land preparation methods ($r = .122$; $p = .003$) and corn yields ($r = .125$; $p = .002$) There was no significant correlation with any of the six remaining items.

The relation of literacy and education to innovativeness is usually a strong one. The written word opens up a whole new world of experiences and serves to give ideas and techniques for new ways of doing things.

The strongest relationship is found with the number of years of school completed. This is a much better measure of education than mere attendance because a student may begin the school year but never complete it. The work demands on the farm may be responsible for the child dropping out but it may also be that classes are discontinued. It is entirely possible that a child may have attended school a number of years but never finished the first grade.

It would be expected that the relationship of literacy would be a stronger one. Self reporting may not be an accurate way to measure this aspect of education. Other behavioral studies have used a measure with better results.

3. Farm Size. This is measured by the stated amount of land that the farmer is presently operating.

"Innovativeness is related to size of farm."

a. A positive correlation was found between size of farm and use of fertilizer ($r = .196$; $p = .001$), use of insecticides ($r = .140$; $p = .001$), changes in planting methods ($r = .183$; $p = .001$), land preparation methods ($r = .194$; $p = .001$), and corn yields ($r = .249$; $p = .001$). There was no significant correlation with any of the three remaining items.

The literature indicates a strong relationship between innovativeness and the size of farm. Land is the basic resource in the farming operation so that as it increases, the margin of alternatives increases also. This is true even at the level of small farming operations as indicated in this study.

Farm size can be considered as a dependent variable as well. If changes in farm practices result in increased yields and income then there is likely to be a corresponding increase in the size of farms also.

Attitudes, Perceptions and Aspirations. A series of items have been listed in the literature that can be categorized under this heading (Rogers & Shoemaker 1971:185-6). These include: empathy, dogmatism, rationality, abstract thinking, fatalism, achievement motivation, aspirations for one's children, and attitudes toward change, risk, education and science.

All of these items are of social-psychological nature and pose difficulties for direct measurement. Four of these items: attitude toward change, attitude toward risk, attitude toward education, and level of aspirations, have been included and are summarized in the following paragraphs.

(SEE TABLE II)

1. Attitude Toward Change. This is measured in terms of the expressed feelings of the respondents as to the relationship between new planting practices and crop yields; the value of using hybrid or certified seed; and the importance of using recommended amounts of fertilizer.

"Innovativeness is related to a favorable attitude toward change."

a. Positive correlations were found between a perceived positive relationship of innovations and increased yields and the use of improved seed ($r = .330$; $p = .001$), use of fertilizer ($r = .376$; $p = .001$), type of fertilizer used ($r = .312$; $p = .001$), the use of insecticide ($r = .204$; $p = .001$), methods of land preparation ($r = .190$; $p = 001$) and corn yield ($r = .330$; $p = .001$). There was no significant correlation with either of the two remaining items.

TABLE II PERSONALITY VARIABLE

	Innovation Items							
Attitudes	Corn Yield (22)	Corn Seed Type (23)	Amount of Fertilizer (30)	Type of Fertilizer (31)	Insecticide Use (35)	Planting Method Change (39)	Land Preparation Methods (49)	Use of Credit (60)
Change & Yield Increase (41)	0.3301 0.001	0.1076 0.008	0.3759 0.001	0.3121 0.001	0.2041 0.001	0.8409 0.001	0.1904 0.001	0.0864 0.026
"Best" type of Corn Seed (26)	0.1390 0.001	0.2711 0.001	0.0401 0.164	0.0295 0.254	0.1204 0.003	0.1182 0.004	0.0933 0.018	0.0498 0.132
"Best" fertilizer quantity (32)	0.3085 0.001	0.0740 0.048	0.5027 0.001	0.4209 0.001	0.2118 0.001	0.2775 0.001	0.2317 0.001	0.1270 -0.002
Risk in Fertilizer Use (33)	0.0147 0.371	-0.0129 0.386	0.0643 0.074	0.0757 0.045	0.1371 0.001	0.0007 0.493	0.0369 0.203	0.0805 0.035
Risk in Insecticide Use (36)	0.0449 0.157	-0.0586 0.094	0.0655 0.071	0.0474 0.144	0.2837 0.001	0.0505 0.128	0.0539 0.113	0.1552 0.001
Desired education for children (130)	0.1471 0.001	0.0567 0.101	0.2104 0.001	0.1001 0.012	0.1484 0.001	0.1799 0.001	0.1887 0.001	0.0684 0.062
Ideal Daily Wage (72)	0.0367 0.192	-0.0712 0.055	0.0837 0.030	0.0296 0.253	0.1732 0.001	-0.0130 0.385	-0.0699 0.058	0.2347 0.001
Perceived future in farming (73)	0.0820 0.033	-0.0644 0.074	0.1234 0.003	0.0567 0.102	0.0939 0.017	0.1465 0.001	0.0517 0.123	0.0537 0.114

b. Positive correlations were found between the perceived value of improved seed and the use of improved seed ($r = .271$; $p = .001$), use of insecticide ($r = .120$; $p = .003$), changes in planting methods ($r = .118$; $p = .004$), and corn yields ($r = .139$; $p = .001$). There was no significant correlation with any of the four remaining items.

c. Positive correlations were found between the perceived value of sufficient fertilizer use and the amount of fertilizer used ($r = .503$; $p = .001$), type of fertilizer used ($r = .421$; $p = .001$), use of insecticide ($r = .212$; $p = .001$), changes in planting methods ($r = .278$; $p = .001$), methods of land preparation ($r = .232$; $p = .001$) and corn yields ($r = .309$; $p = .001$). There was no significant correlations with either of the two remaining items.

It is difficult to know whether an attitude change precedes a behavior change or if the reverse is true. The literature does indicate a close relationship of agricultural practices and the related attitudes. In this particular study the correlations are high compared with the other items analyzed.

2. Attitude Toward Risk. This is measured in relation to two specific practices: the perceived risk in using fertilizers and the perceived risk in using insecticides. The risk could be expressed in economic terms as well as danger to the person or land.

"Innovativeness is related to a more favorable attitude toward risk."

a. Positive correlations were found between no perceived risk in using insecticides and use of insecticides ($r = .284$; $p = .001$) as well as use of credit ($r = .155$; $p = .001$). There was no significant correlation with any of the six remaining items.

b. A low positive correlation was found between no perceived risk in using fertilizer and use of insecticide ($r = .137$; $p = .001$). There was no significant correlation with any of the seven remaining items.

In economic terms, the risk factor is high for the subsistence farmer. The farmer does not control the natural elements, he does not control the market and he may not even have ultimate control over the land. An expression often used in Latin America is "invest nothing but your time so that anything

you might make will be profit."

Although the literature indicates a close relationship between risk-taking and innovativeness it may not be as clear among subsistence farmers.

3. Attitude Toward Education. This is measured in terms of the desired level of education for one's children.

"Innovativeness is related to a favorable attitude toward education."

a. Low positive correlations were found between the level of desired education for children and use of fertilizer ($r = .210$; $p = .001$), use of insecticides ($r = .148$; $p = .001$), changes in planting methods ($r = .180$; $p = .001$), methods of land preparation ($r = .189$; $p = .001$) and corn yields ($r = .147$; $p = .001$). There was no significant correlation with any of the three remaining items.

Educational aspirations are much like educational attainments in their relation to innovativeness. The desire for knowledge and change may even be greater than the opportunities for attending school. At the time that many of the respondents were of school age there was no local school available. Now schools are available so that they can hope for educational attainments for their children even though they have no practical way of getting an education themselves.

4. Level of Aspirations. Two questions were used as measures of aspirations: the amount of daily wage considered adequate and their feeling toward farming as a way to "get ahead." Educational aspirations are certainly related but they have been considered apart.

"Innovativeness is related to higher aspirations."

a. Positive correlations were found between level of ideal daily wage and use of insecticides ($r = .173$; $p = .001$) as well as use of credit ($r = .235$; $p = .001$). No significant correlations were found with the six remaining items.
b. Low positive correlations were found between a positive attitude toward the future of farming and amount of fertilizer used ($r = .123$; $p = .003$) as well as changes in

planting methods (r = .147; p = .001). No significant correlations were found with any of the six remaining items.

Subsistence farmers are not generally classified as entrepreneurs. They are not market oriented and would be frustrated if their aspirations were high in terms of production and income. It is quite likely that those with high aspirations have already migrated to other areas. This may account for the rather low correlations found on these two items. The highest correlation relates credit and wages; both are economic items and thus have reason for a stronger relationship.

Communication Behavior. A series of items have been listed in the literature that can be categorized under this heading (Rogers & Shoemaker, 1971:188-190). These include social participation, social integration, cosmopoliteness, change agent contact, mass media exposure, interpersonal communication, information seeking behavior, knowledge of innovations, and opinion leadership activity. Only five items have been included in the present study: social participation, cosmopolitan behavior, social integration, contact with change agents, and exposure to mass media. The findings are summarized

(SEE TABLE III)

in the following paragraphs.

1. Social Participation. This is measured by the stated membership in an organized group.

"Innovativeness is related to social participation."

a. Positive correlations were found between membership in organized groups and amount of fertilizer used (r = .287; p = .001), type of fertilizer used (r = .157; p = .001), use of insecticide (r = .199; p = .001), changes in planting methods (r = .168; p = .001), use of credit (r = .199; p = .001), and corn yield (r = .109; p = .007). No significant correlations were found with either of the two remaining items.

TABLE III COMMUNICATION BEHAVIOR

Communication - Items	Innovation Items: Corn Yield (22)	Corn Seed Type (23)	Amount of Fertilizer (30)	Type of Fertilizer (31)	Insecticide Use (35)	Planting Method Change (39)	Land Preparation Methods (49)	Use of Credit (60)
Group Membership (14)*	0.1090 0.007	-0.0189 0.336	0.2872 0.001	0.1574 0.001	0.1993 0.001	0.1076 0.001	0.0899 0.022	0.1988 0.001
Frequency of visits to nearest town (95)	0.0188 0.337	-0.0335 0.226	0.0732 0.050	-0.0328 0.231	0.0844 0.029	0.0495 0.133	0.0364 0.207	0.0483 0.139
Visits to regional center (96)	0.1199 0.003	0.1398 0.001	0.0734 0.049	0.0168 0.353	0.1152 0.005	0.1266 0.002	0.2469 0.001	0.0193 0.333
Frequency of visits to Guatemala City (97)	0.0918 0.019	0.0849 0.028	0.0217 0.313	-0.0110 0.403	0.0848 0.028	0.1054 0.009	0.1588 0.001	-0.0493 0.134
Number of close friends (92)	0.0596 0.090	0.0320 0.236	0.0663 0.068	0.0600 0.089	-0.0030 0.473	0.0601 0.089	-0.0246 0.290	0.0144 0.374
Discussion of community problems with others (93)	0.1270 0.002	0.0274 0.269	0.0704 0.057	0.0898 0.022	0.0458 0.152	0.0894 0.022	-0.0170 0.351	0.0681 0.063
Agronomist (80)	0.1516 0.001	0.0616 0.083	0.2054 0.001	0.1041 0.010	0.0698 0.058	0.1517 0.001	0.0510 0.126	0.0220 0.311
Teacher (79)	0.0390 0.191	0.0391 0.190	0.1039 0.010	0.0394 0.188	0.0628 0.079	0.0627 0.080	-0.0055 0.451	-0.0247 0.290
Store (81)	0.0438 0.163	0.0661 0.069	0.0996 0.012	0.0354 0.213	0.0557 0.105	0.0395 0.188	-0.0566 0.102	-0.0281 0.264
Friends and Neighbors (82)	0.0851 0.028	0.0080 0.429	0.1035 0.010	0.0633 0.076	0.0422 0.172	0.0727 0.051	-0.0348 0.217	0.1559 0.001
Radio (76)	0.0935 0.018	0.0955 0.016	0.0878 0.024	0.0941 0.017	0.0715 0.054	0.0138 0.379	0.0262 0.278	0.0402 0.184
Newspaper (77)	0.0609 0.086	0.0528 0.118	0.1088 0.007	0.0424 0.171	0.0787 0.038	0.0493 0.134	0.0006 0.494	-0.0357 0.211
Magazines (78)	0.0683 0.062	0.0609 0.086	0.1038 0.010	0.0335 0.226	0.0760 0.044	0.0437 0.164	-0.0134 0.382	-0.0331 0.196

* Item number in questionnaire

There is one organized farmer's group that some of the respondents are members of. This group has served as an agent for fertilizer purchases and thus the higher correlation of fertilizer amount. This farmer's group has also emphaized the use of insecticides and has served as a credit agency also.

A higher correlation with corn yields would also be expected. Perhaps the low correlation could be explained in part by the use of fertilizer and insecticides on beans instead of corn in certain areas. It is also noteworthy that the organized farmers group meets in a central location that is more accessible to one of the sub-areas.

2. Cosmopolitan-Like Behavior. This is measured by the reported frequency of visits to the nearest town, the regional market town and the capital city.

"Innovativeness is related to cosmopolitan like behavior."

a. No significant correlations were found between visits to nearest town and any of the items.
b. Positive correlations were found between visits to the regional market town and use of improved seed ($r = .140$; $p = .001$), use of insecticides ($r = .115$; $p = .005$), change in planting methods ($r = .127$; $p = .002$), methods of land preparations ($r = .247$; $p = .001$) and corn yields ($r = .120$; $p = .003$). No significant correlations were found with any of the three remaining items.
c. Low positive correlations were found between visits to the capital city and changes in planting methods ($r = .150$; $p = .009$); as well as methods of land preparation ($r = .158$; $p = .001$). No significant correlations were found with any of the six remaining items.

Travel to other areas, and particularly the urban and marketing centers, has been a rather consistent indicator of innovativeness. Diffusion takes place in a space media so that travelers become carriers of new ideas. For the subsistence farmer, visits to the regional market center are more closely related to innovativeness than visits to the capital city. At the regional center, relationships are still at the interpersonal level, yet it is possible to buy improved seeds, fertilizers, insecticides and even have contact with

the government agricultural agencies.

3. Integration in the Social System. This was measured by responses to the questions on the number of close friends and the felt value of discussing community and agricultural problems with others.

"Innovativeness is related to high integration in the social system."

a. No significant correlations were found between number of close friends and any of the items.
b. A low positive correlation was found between the perceived value of discussing community and agricultural problems with others and corn yields ($r = .127$; $p = .002$). No significant correlations were found with any of the other seven items.

Groups can serve to provoke change as well as prevent it. In a traditional community it is quite possible that a change-prevention norm would predominate. It is likely that friendship and group formation would follow the network of family and that this would also become the most important reference group. The findings from this study would indicate that innovativeness is not related social integration. It will be interesting to follow the results of radio-discussion groups to see if a change-provoking norm will develop in the whole area or if a faction of change-oriented people will form and separate somewhat from the larger community.

4. Change Agent Contact. This is measured by the stated amount of contact with agronomists, teachers, store personnel, and friends and neighbors, as sources of agricultural information.

"Innovativeness is related to the amount of contact with change agents."

a. Positive correlations were found between contact with agronomists as a source of agricultural information and use of fertilizer ($r = .205$; $p = .001$), type of fertilizer ($r = .104$; $p = .01$), change in planting method ($r = .152$; $p = .001$), and corn yield ($r = .152$; $p = .001$). No significant correlations were found with any of the remaining four items.
b. A low positive correlation was found between contact with teacher as a source of agricultural information and use

of fertilizer ($r = .104$; $p = .01$). No significant correlations were found with any of the remaining seven items.

c. No significant correlations were found between contact with store personnel as a source of agricultural information.
d. Low positive correlations were found between contact with friends and neighbors as a source of agricultural information and use of fertilizer ($r = .104$; $p = .01$) as well as use of credit ($r = .156$; $p = .001$). No significant correlations were found with any of the remaining six items.

All of the above mentioned agents of change have been cited in the literature as contact points for new information and skills. It is interesting to note that all except the agronomist show no, or only low correlations with innovativeness. It is also interesting to note that the teacher is not seen as a significant source of agricultural information.

5. Mass Media Exposure. This is measured by the reported use of radio, magazines, or newspapers as sources of agricultural information.

"Innovativeness is related to the amount of exposure to mass media."

a. No significant correlations were found between use of radio as a source of agricultural information and any of the items.
b. A low positive correlation was found between the use of newspapers as a source of agricultural information and use of fertilizer ($r = .109$; $p = .007$). No significant correlations were found with any of the seven remaining items.
c. A low positive correlation was also found between the use of magazines as a source of agricultural information and use of fertilizers ($r = .104$; $p = .01$). No significant correlations were found with any of the seven remaining items.

The literature would suggest that subsistence farmers would tend to use personal contact more than mass media as information sources. Certainly there is no indication that either of these three media account for the innovativeness. It is possible that a few have read of fertilizer use in newspapers or magazines but this would likely be confirmed with the agronomist or friends and neighbors before use.

Summary and Conclusions

The purpose of this paper is to test the usefulness of the generalizations emerging from previous research in the diffusion of innovations when applied to a relatively homogeneous sample of subsistence farmers. The data for this study were gathered as part of a project in non-formal education in a Spanish-speaking area of Guatemala. Five-hundred-six farmers were selected in a multi stage purposive/random sample for interviewing in late 1973. A pre-coded questionnaire containing 130 items was administered in on-the-farm interviews. The items included questions on basic demographic characteristics, communications patterns, educational levels, patterns of affiliation, level of living indicators, and agricultural practices. Simple correlations were run on selected variables to test the relationship of agricultural practice innovations and other characteristics of the individual farmers. Eight items were used as dependent variables to measure innovativeness.

In the preliminary analysis of the data, expected positive relations were found between innovativeness and size of farm; perceived positive relationship of innovations and increased yields, perceived value of improved seed; the perceived value of sufficient fertilizer; perception of no risk in using insecticides; membership in organized groups; visits to the regional market town; and contact with agronomists. Contrary to expectations, no significant relationship was found between innovativeness and number of years of schools attended; visits to the nearest town; number of close friends; contact with store personnel as a source of agricultural information; and use of radio as a source of agricultural information. As was expected, there was no relationship between age and innovativeness. Also, low positive correlations were found between innovativeness and fourteen additional variables. The results of this study indicate that different degrees of

innovativeness can be measured even among such homogeneous populations as traditional subsistence farmers. The generalizations as proposed by the Diffusion Documentation Center at Michigan State University serve as an adequate framework for such measurement.

The correlations were generally lower than expected. Further analysis of the data is necessary to determine if some of the relationships are merely spurious in nature. Partial correlation analysis could be used to give further insight into the relative importance of each of the characteristics that are related to innovativeness.

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APPENDIX VIII

THE COMPARATIVE STUDY OF THE IMPACT OF MASS COMMUNICATION ON SUBSISTENCE FARMERS IN GUATEMALA*

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THE COMPARATIVE STUDY OF THE IMPACT OF MASS COMMUNICATION ON SUBSISTENCE FARMERS IN GUATEMALA

This paper is a report on an exploration in the use of mass media to transmit new knowledge, attitudes and practices to a traditional society. There are three related questions that are considered in the study: Is it realistic to expect changes to take place in a traditional society within the span of a few months?; If such changes take place are they measurable?; and, Can the differential effect on these changes by mass media, combined with group and individual communication methods, be determined? The mass media in this particular study is radio. The knowledge, attitudes and practices are related to agriculture. Subsistence farmers in southeastern Guatemala are the tradition oriented population.

Background Rationale

Producing community change at the level of the subsistence farmer in a peasant economy has emerged as a major goal in development. An era of rapid population growth and a world food shortage has focused attention on improving the daily life of the two-third's of the world's population in developing nations. Primary targets in this approach include changes in agricultural, health, and nutritional practices. These universal needs for change have led to the exploration of applying non-formal education techniques through mass media as an effective means of accelerating change.

The literature on communication and social change can be found in a number of locations that are related to sociology. These can be found at the theoretical level in social psychology; include communications research; research on the diffusion of innovations and the adoption process; the KAP (knowledge, attitude, and practice) studies in agriculture and family planning; and at the applied level of program evaluation in nonformal

education. There have been a growing number of summary publications in recent times that have bearing on the basic questions proposed in this study.*

The prior studies indicate that people in a traditional society do not easily change their behavior patterns. The margin of risk for the subsistence farmer is very narrow. He has the same general characteristics of those classified as the "late majority" and "non-adopters" in the literature on the diffusion of innovations. Even among more change oriented populations, the time lag between first hearing about a new practice and finally adopting it, is usually several years. When the more traditional sections of a population are compared to the more innovative, the time lag between hearing and adopting is increased even more.

Although it is not likely that early changes in practice will take place as a result of the communication of new ideas, this does not preclude other changes. Both thetheoretical and the applied studies have shown that there is consistency between knowledge, attitudes and behavior. In terms of the adoption of new practices the sequence moves from knowledge about a new practice, to persuasion that it is a good idea, to a decision to try it, and finally a confirmation that the new practice is a good one and should become part of the customary way of doing things. Yet, there is no indication that a person is locked into the sequence so that once he has heard of a new idea it is only a matter of time before he adopts the related

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*See: Brombeck and Thompson, 1973; Coombs and Ahmed, 1974; Ingle, 1974; Kleis, 1974; Lerner and Schramm, 1967; Lionberger, 1960; Mathur and Neurath, 1959; McAnany, 1973; Myron, 1964; Paulston, 1972; Richardson, 1969; Rogers and Shoemaker, 1971; Rogers and Svenning, 1969; Roy, Walsanen and Rogers, 1969; Schramm, 1973; Secord and Backman, 1974; Ward and Herzog, 1974; and Wilson and Gallup, 1954.

practice. On the contrary, he may reject the proposed behavior change at any stage. The studies do indicate that each stage is an important one and that early change may be found only at the knowledge or attitude levels but not yet evident in behavior. The studies further indicate that it is possible to measure changes of knowledge and attitude as well as behavior.

The use of mass communication in education and development programs has been the object of studies for more than two decades. Mass communication has been found as an effective media for the early stages of the adoption process (knowledge stage) and particularly for those individuals classified as innovators. Interpersonal communication methods are more effective in changing attitudes that lend to a decision to try out the new idea and in the confirmation of the new behavior pattern. Interpersonal communication methods are also more effective than mass methods when communicating with people who are more tradition oriented. The most effective programs include a mix of mass, group and personal communication methods.

McAnany (1973) has documented the need and the reasons for use of radio as an effective behavior change vehicle. In reviewing the use of radio as man's most universal mass media communication, he has pointed out some of the major issues. He cites potential advantages as time, cost effectiveness, and localness. There is evidence and data to support the advantages on time, on cost, and the capacity for localization of rural development effort. On the third potential, effectiveness, he makes the following statement:

> "The third potential that radio has is its effectiveness. There is continuing debate over the comparative effectiveness of radio vs. television because little direct comparative evidence exists (Jameson, Suppes, Wells, 1973; Jameson and Clees, 1973). The debate may be put aside in the present context because television is simply not reaching, nor likely to reach, the rural poor in the next few years. The effectiveness of radio for educational purposes has not been as widely tested as television. Still,

> there is considerable evidence that radio can be, and has been used effectively for instruction in formal school settings (Forsythe, Leslie, 1970; Jameson, Suppes, Wells, 1973)..." (McAnany 1973:2).

The question of effectiveness of radio in changing knowledge, attitude and practice remains largely unanswered. Schramm (1973) has discussed mass media systems in field studies but again without a definitive evaluation of effectiveness. Schramm documents the difficulty of control in field experiments in developing countries. Neurath (Mathur and Neurath, 1959) reported on the use of radio farm forum in Indian villages and presents data on change in knowledge, in favor of radio combined with a forum. A description of the programs is available but the precise behavior practices advocated were not clear making it difficult to determine the independent variables. From the literature on communication of innovations, Rogers and Shoemaker (1971) indicate that interpersonal channels are needed to change attitudes. This would appear to support Neurath's findings also, to the effect that radio alone may not bring change at a behavioral level. This conclusion, however, has not been sufficiently tested in the field.

The real test of effectiveness of any media presentation is on its ability to effect change in knowledge, attitude and practice (KAP). Face validity derived from expert advice is insufficient for evaluation. Several conditions must be met for radio to be effective in change. Radio listenership must first be developed and measured. Second, programming must include specific behavioral and non-behavioral goals so that changes in knowledge, attitude and practice may be measured. Third, feedback from consumer groups on a formal, regular basis is needed to perform a monitoring function to allow for program change when not on target.

The present study is a report on one methodological aspect of the evaluation of an ongoing project in Latin America. The project, Basic Village

Education, will span a five-year interval of baseline and follow-up studies across a broad continuum of change. Because of the availability of support services and the appropriateness of the content area, agricultural practices were designated as the subject matter. The media is radio, used under three conditions or treatments. The treatments, similar to those used by Neurath, are radio, radi plus a village monitor,* and radio plus a village monitor and agronomist. These three conditions are then compared with a control area with no radio. A final and formal evaluation of this project will consist of comparisons of baseline studies carried out over a number of regions over the five-year period of the study.

This report will deal with short-term evaluation in the form of development of specific agricultural practices, the incorporation of practices into radio messages and the continuing evaluation of the reception and impact of these messages. The independent variables in this study are the specific agricultural practices delivered through the radio treatments and the dependent variables are change in knowledge, attitude and practice.

In order to test the comparative impact of mass media (radio) and the combination of other communication treatments, three major areas of hypothesis are proposed. One is directed at the knowledge level (K), the second at the attitude level (A), and the third at the practice level (P). A comparison of change between knowledge, attitude and practice is also included.

Hypotheses related to knowledge.

1. The reported new knowledge of recommended practices in the radio treatment area will be greater than in the control area.

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*Monitor - group meetings that are conducted by a local paraprofessional.

2. The reported new knowledge of recommended practices in the radio/monitor area will be greater than in the radio area.
3. The reported new knowledge of recommended practices in the radio/monitor/agronomist area will be greater than those in the radio/monitor area.

Hypotheses related to attitudes.

1. Favorable attitudes toward recommended practices in the radio area will be greater than those in the control area.
2. Favorable attitudes toward recommended practices in the radio/monitor area will be greater than those in the radio area.
3. Favorable attitudes toward recommended practices will be greater in the radio/monitor/agronomist area than they will be in the radio/monitor area alone.

Hypotheses related to practice change.

1. The increase in the use of recommended practices in the radio area will be greater than those in the control area.
2. The increase in the use of the recommended practice in the radio/monitor area will be greater than those in the radio area alone.
3. The increase in the use of recommended practice of radio/monitor/agronomist will be greater than those of the radio/monitor area.

In addition to the above hypotheses, it would be expected that more farmers would have knowledge of the recommended practices than those that would have a favorable attitude and want to try them out. Also, it would be expected that more farmers would have a favorable attitude toward the use of the practices than the number that had actually used them.

Sample Selection

Subsistence farmers are the target population for this study. To select an area and a population for the study it was necessary to decide on the characteristics of subsistence farmers as they are found throughout the world. They have been characterized in the following way:

1. They used a subsistence form of agriculture.
2. They live in a cluster of houses, from a few hundred to a few thousand people.
3. Have greater self-sufficiency than farmers in industrial states but dependent on cities for special goods.
4. Sell some surplus production for cash.
5. Are ambivalent towards the city in that they need goods but have fear of exploitation.
6. They are bound by traditional values and custom.
7. They are on the average, illiterate.
8. They have low levels of educational attainment.
9. They follow regional patterns of diet, home use of remedies, and use of local practitioners.
10. Are not productive farmers in terms of the national economy (Arensberg and Niehoff, 1971).

From results of a baseline survey conducted in the fall of 1973 and early reconnaisance survey findings, it was found that these farmers do meet most of the characteristics of subsistence farmers. They operate small farms and the particular sample that was chosen had an average size farm of 6.7 acres. They usually own their land although some are renters or use some communal land. Their production is limited to a few basic crops; all of the farmers grow corn, almost all of them grow beans, and many grow

sorghum. These crops are grown basically for home consumption. In addition to corn, beans and sorghum, their diet includes a few items that are purchased once a week on a visit to the village or to the regional market center. In addition to their own crops, a large proportion of the farmers buy additional corn and beans to supplement that grown at home. Generally their travel is limited to the market trips and a yearly trip to the capital city or to the coast for season work to supplement the family income. Some also travel yearly to a religious center. The educational levels of these farmers are low and the illiteracy rates are high. New agricultural information comes by way of friends and neighbors or sometimes by radio. There are a few cases where the farmers have had contact with agricultural technicians.

The homes are owned and of simple construction. Tile roofs, adobe walls and dirt floors predominate. Sanitary facilities and the assurance of pure water are lacking. These farmers have high educational aspirations for their children and would still choose to be farmers if they had their choice of other jobs.

The baseline information which was gathered from field interviews of 506 farmers in 1973, provided the information concerning listening habits and the level of information, attitudes, and practices of the subjects. Utilizing this information with further input by agronomists and development specialists, the message was prepared as a series of behavioral objectives. These were stated as specific farm practices and were then incorporated into a monthly sequence of radio broadcasts. Programming begins with behavioral objectives and incorporates them into a script produced for the listening audience. Data is collected by specifically sampling the listening practices to determine if the farmers are listening and to

determine the impact on knowledge, attitudes and practice.

Radio programming proceeded in a sequence appropriate to the crop year, and dealt with specific practices related to planting corn, use of credit, use of fertilizers, use of insecticides, method of storage, marketing practice and in all 45 specific practice areas, 36 of which are mentioned in this study. Each program was scheduled during an appropriate month relative to the planting or harvesting season.

Data Collection

The time sample procedure consisted of a questionnaire developed from the same behavioral objectives used in programming. A multi-dimensional format was used in which the following questions were a part:

1. What did you do last year (in relation to a given agricultural practice)?
2. What did you do this year (related to same practice)?
3. Have you heard any new information regarding this practice?
4. What was the source of the new information?
5. How do you feel about this practice?

Each questionnaire contained approximately 35 questions that were related to six or seven basic practices that had been broadcast the prior month. (See Table I.)

Interviews were conducted with a 20% sample each month from each treatment and control area. The sample was selected randomly from each of the five villages in all four sub-areas. In addition to this randomization, all of the villages were divided into five zones so that a physical stratification of the sample could be made. A person was selected from each of the five zones so that all of the sections of every village would be interviewed each month. There were 25 people interviewed in each of the four

sub-areas giving a total of 100 people interviewed every month in the whole experimental area where the study was conducted. There were seven time samples conducted throughout the year, five of which are included in this study. A problem was encountered in that many of the farmers were absent from their farms due to work on the coast so that it was not always possible to interview them at the time their name was chosen for the sub-sample. In some cases they were not available for interviewing in any of the monthly surveys.

The person selected to do the interviewing was chosen because of his prior experience in survey research, his knowledge of the area, and his rapport with the people. The interviewing procedures for the time sample were pretested and determined to be most effectively carried out in the following way: After the sample was selected and a list of names was available, the interviewer went to the home of the person to be interviewed. Upon arrival he began with an informal conversation in which he presented himself and gave the reason for the visit. After the conversation had proceeded informally he then asked specific questions and filled in the questionnaire.

The data from the questionnaires was field checked, transferred to sense sheets and then to computer cards for standard data analysis. A test of the difference of means was used to compare the effect of different communication treatments on changes in knowledge, attitudes and practices.

Findings

The results of the 1974 Time Sample Surveys are summarized in Tables II through VIc.

Comparative Measurement of New Knowledge. As can be observed in Table III, there is a progressive increase in reported new knowledge of recommended

practices by treatment area. Radio is greater than Control and the difference is highly significant (see Table IVa). Radio/Monitor is greater than Radio alone but the difference is not significant (see Table IVb). Radio/Monitor/Agronomist is greater than Radio/Monitor and the difference is significant (see Table IVc).

Comparative Measurement of Favorable Attitudes. As can be observed in Table III, there is a progressive increase in the favorable attitude toward the recommended practices by treatment area. Radio is greater than Control and the difference is significant (see Table Va). Radio/Monitor is greater than Radio alone but the difference is not significant (see Table Vb). Radio/Monitor/Agronomist is greater than Radio/Monitor and the difference is significant (see Table Vc).

Comparative Measurement of Practice Change. As can be observed in Table III, the difference between the reported use of recommended practices in 1973 and 1974 does not follow the same pattern of progressive increase across communication treatment sub-areas as with knowledge and attitudes. There is an absolute decrease in the use of recommended practices from 1973 to 1974 in all sub-areas except one. The decrease in the Radio sub-area is greater than in the Control sub-area although the difference is not significant (see Table VIa). The decrease in the Radio/Monitor sub-area is less than in the Radio sub-area alone and the difference is significant (see Table VIb). The increase in the Radio/Monitor/Agronomist sub-area is greater than in the Radio/Monitor sub-area although the difference is not significant (see Table VIc).

Comparative Measurement of Knowledge, Attitudes and Practices. If it is assumed that all those who used the recommended practice in 1973 also had the knowledge component as well, then this can be added to "new knowledge"

for a count of "knowledge: 1974" of 1650 practices. This can be compared to the "favorable attitude: 1974" which is reported as 1388 practices. In turn, this can be compared to reported "practice use: 1974" of 704 practices. This shows reported knowledge of recommended practices to be greater than reported favorable attitudes toward these practices. It also shows that the reported favorable attitudes toward recommended practices are considerably more numerous than the use of the practices. There are many assumptions in this procedure and caution is advised in taking these comparisons as conclusive.

Discussion and Implication

One of the greatest problems in using a single year for the measurement of change in agricultural practices is that many things in the natural and cultural environment change from year to year making it impossible to use a desired practice a given year although it is generally adopted in the long run. The use of fertilizers in 1974 is just such a case. The international oil crises had a direct effect on the availability and price of fertilizers. Even when available, the price in 1974 was at least three times that of 1973. One of the sub-areas (the one that was randomly chosen for Radio treatment alone) already had used many of the recommended farm practices related to chemical fertilizer prior to the initiation of the Basic Village Education program so that the impact of the fertilizer shortage gave a negative effect. Some indication of the impact of fertilizer shortage is available from the data presented here but only long term measurement of change will give a more accurate assessment. For example, 40% of the farmers interviewed said they had used recommended types of fertilizer at seeding time (TS 3, #18) in 1973 but only 23% used it in 1974 in spite of increased knowledge and favorable attitudes. The responses on non-fertilizer items

were in contrast to the above example. In response to the question on the order of weeding and hilling corn (TS 7, #18), 33% of the farmers interviewed said they had used the recommended practice in 1973 and this had increased to 41% in 1974. It should be mentioned also that 1973 was one of the best crop years that has been experienced in the study area during the last decade.

No attempt has been made in this study to analyze the message content or methods of presentation in the different treatment areas. A further analysis by practice could give an indication of which ones had the greatest impact.

From the preliminary analysis of the data it would appear that mass media (radio) can be used to effect change in knowledge and attitudes among a traditional population such as the subsistence farmers in southeastern Guatemala. (both hypotheses comparing radio to no radio at the level of knowledge and attitudes were confirmed.) It also suggests that the possibilities of knowledge and attitude change increase as group meetings and personal visits of technicians are added to the message system. (Two of the four hypotheses were confirmed. The addition of the monitor alone to radio does not make a significant difference but it is found that the results from the combined interpersonal treatment of monitor and agronomist with the mass treatment of radio is significantly greater than with radio alone. This is true at the levels of knowledge and attitudes.) The possibilities of changing practices, at least within the short period of one year, by the use of radio or radio combined treatments, is not substantiated by the data from the time sample surveys.

Returning to the original questions posed at the initiation of this study, some tentative answers can be stated. Changes can be expected in

traditional society in a short span of time at the levels of knowledge and attitude but should not be expected to manifest themselves at the level of practices. These changes appear to be measurable and the differential effect of mass media (radio) alone and mass media combined with interpersonal communication can be determined.

This study is only one of a series that will be conducted as part of the Basic Village Education Project so that the present findings, which are tentative in nature, can be further confirmed or amplified in the future. The actual measurement of crop yields will be an important part of the project.

TABLE I

BASIC VILLAGE EDUCATION

SUGGESTED PRACTICES MEASURED IN 1974 TIME SAMPLE SURVEYS

TS-3	3	Soil disinfecting
	8	Selection of corn seed
	13	Number of corn seed per hill
	18	Type of fertilizer at seeding
	23	Amount of fertilizer per manzana
	28	How to apply fertilizer
	33	How to measure amount of fertilizer applied by hill dropping
TS-4	3	Use of insecticides
	8	Height of weeds at first weeding
	13	Association of weeding and hilling
	18	Use of weed control
	23	Use of fungicide
	28	How to drain steep land
	33	How to drain flat land
	38	How to drain low land
TS-5	3	Control of insects in beans
	8	Safety precautions with insecticide use
	13	Type of insecticide to control corn ear worm
	18	How to plant second crop/association
	23	How to obtain second crop-sorghum seed
	28	How to obtain second crop-corn seed
TS-6	3	Use of compost piles
	8	Advisor for fertilizers
	18	Type of fertilizer/initiation of flowering corn
	23	Amount of fertilizer per manzana on corn/bean association
	28	Amount of fertilizer per manzana on sorghum/bean association
	33	Proper time to disinfect soil with insecticides
	38	Advisor to identify crop diseases
	13	Timing of fertilizer at initiation of flowering
TS-7	3	First weeding of the corn field/determined by weed height
	8	Second weeding of the corn field/determined by weed height
	13	Order in which you should weed, hill and fertilize
	18	Order in which you should weed and hill your first crop of corn
	23	Insecticide most effective for the diabrotica beetle
	28	How to mix the insecticides used to control the diabrotica beetle
	33	Advisor about use of insecticides on the crops

TABLE II

BASIC VILLAGE EDUCATION

SUMMARY OF INTERVIEWS IN 1974 TIME SAMPLE SURVEYS

1. Total number of monthly time sample surveys (TS) included in study = 5.
2. Number of practices included in each survey:
    1. TS III = 7 (less fertilizer = 3)
    2. TS IV = 8 (less fertilizer = 8)
    3. TS V = 6 (less fertilizer = 6)
    4. TS VI = 8 (less fertilizer = 3)
    5. TS VII = 7 (less fertilizer = 6)

Total Practices=36 (Total practices less fertilizer = 26)

3. Number of respondents chosen for each survey:
    1. Control sub-area = 25
    2. Radio sub-area = 25
    3. Radio + monitor sub-area = 25
    4. Radio + monitor + agronomist = 25

    Total respondents 100
4. Total respondents chosen from each sub-area for all five surveys:
    1. Control sub-area = 125
    2. Radio sub-area = 125
    3. Radio + monitor sub-area = 125
    4. Radio + monitor + agronomist = 125

    Total respondents 500

TABLE III

BASIC VILLAGE EDUCATION: GUATEMALA

REPORTED KNOWLEDGE, ATTITUDE AND USE OF RECOMMENDED AGRICULTURAL PRACTICES

Communication Treatment

Response by Experimental Sub-Area*

All Practices		Control	Radio	Radio + Monitor	Radio + Monitor + Agronomist	Total All Sub-Areas**
Use 1973	No.	148	254	200	167	769
	%	16.4	28.2	22.2	18.6	21.4
New knowledge: 1974	No.	120	220	244	303	887
	%	13.3	24.4	27.1	33.7	24.6
Favorable attitude: 1974	No.	274	328	365	421	1388
	%	30.4	36.4	40.6	46.8	38.6
Use 1974	No.	110	212	198	184	704
	%	12.2	23.6	22.0	20.4	19.6
Change in use 1973-74	No.	-38	-42	-2	17	-65
	%	- 4.2	- 4.7	-0.2	1.9	- 1.8

*Total possible responses = 900.
**Total possible responses = 3600.

Source: 1974 Monthly Time Samples III through VII.

BASIC VILLAGE EDUCATION: GUATEMALA

Reported New Knowledge of Recommended Agricultural Practices 1974

TABLE IVa

CONTROL	RADIO
120*	220
0.1317**	0.2470
T = 5.70 d.f. = 243.17 P = 0.000	

TABLE IVb

RADIO	RADIO + MONITOR
220	244
0.2470	0.2701
T = 0.96 d.f. = 239.02 P = 0.339	

TABLE IVc

RADIO + MONITOR	RADIO + MONITOR + AGRONOMIST
244 0.2701	303 0.3320
T = 2.23 d.f. = 245.26 P = 0.027	

*Total responses (900 possible)
**Mean response of all respondents (N=125)

Source: 1974 Monthly Time Samples III through VII.

BASIC VILLAGE EDUCATION: GUATEMALA

Reported Favorable Attitudes Toward Recommended Practice 1974

TABLE Va

CONTROL	RADIO
274* 0.3088**	328 0.3720
T = 2.41 d.f. = 247.97 P = 0.017	

TABLE Vb

RADIO	RADIO + MONITOR
328 0.3720	365 0.4082
T = 1.30 d.f. = 244.63 P = 0.194	

TABLE Vc

RADIO + MONITOR	RADIO + MONITOR + AGRONOMIST
365 0.4082	421 0.4713
T = 2.09 d.f. = 247.20 P = 0.038	

*Total responses (900 possible)
**Mean response of all respondents (N=125)

Source: 1974 Monthly Time Samples III through VII.

BASIC VILLAGE EDUCATION: GUATEMALA

Reported Change in Use of Recommended Practices 1973-1974

TABLE VIa

CONTROL	RADIO
-38* -0.0404**	-42 -0.0471
T = -0.40 d.f. = 222.08 P = 0.689	

TABLE VIb

RADIO	RADIO + MONITOR
-42 -0.0471	-2 -0.0002
T = 2.53 d.f. = 245.15 P = 0.012	

TABLE VIc

RADIO + MONITOR	RADIO + MONITOR + AGRONOMIST
-2 -0.0002	+17 0.0184
T = 1.11 d.f. = 245.75 P = 0.269	

*Total responses (900 possible)
**Mean response of all respondents (N=125)
Source: 1974 Monthly Time Samples III through VII.

BASIC VILLAGE EDUCATION: GUATEMALA

Reported New Knowledge, Favorable Attitudes and Change in Practices:

A Comparison of the Effect of Radio vs. Radio/Monitor/Agronomist

Table VIIa
New Knowledge 1974

RADIO	RADIO + MONITOR + AGRONOMIST
22.0* 0.2470**	303 0.3320
T = 3.31 d.f. = 228.34 P = 0.001	

Table VIIb
Favorable Attitude 1974

RADIO	RADIO + MONITOR + AGRONOMIST
328 0.3720	421 0.4713
T = 3.46 d.f. = 240.77 P = 0.001	

Table VIIc
Change in Use 1973-74

RADIO	RADIO + MONITOR + AGRONOMIST
-42 -0.0471	+17 0.0184
T = 3.67 d.f. = 238.31 P = 0.000	

*Total Responses (900 possible)
**Mean response of all respondents (N = 125)
Source: 1974 Monthly Time Samples

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CHARACTERISTICS OF MORE "PROGRESSIVE*" SUBSISTENCE FARMERS IN JUTIAPA AT THE POINT OF INITIATION OF THE BASIC VILLAGE EDUCATION PROJECT ON JANUARY 1, 1974**

The more progressive farmers:

1. Use improved seed (includes selected native as well as hybrid and/or certified.)
2. Use recommended amounts of fertilizer.
3. Use recommended type of fertilizer.
4. Use insecticides.
5. Have made changes in their planting methods in recent years.
6. Use oxen or tractors to prepare their land.
7. Use credit.
8. Have slightly larger farms.
9. Are members of organized community groups (cooperatives, etc.).
10. Visit Jutiapa more often.
11. Have more contact with agronomists.
12. Feel that new recommended practices will improve their yields.
13. Feel that it is important to use improved seed.
14. Feel that it is important to use the proper amount of fertilizer.
15. Feel that there is no risk in using insecticides.

There is also some indication that the "progressive" farmers:

1. Are literate.
2. Have completed more years of schooling.
3. Visit Guatemala City more often.
4. Have more contact with friends and neighbors.
5. Have more contact with school teachers.
6. See value in discussing agricultural problems with others.
7. Make use of newspapers and magazines.

*As measured by higher corn yields and related agricultural practices.

**Source - 1973 Baseline Survey

APPENDIX X

Evaluation Report
May 9, 1975

BASIC VILLAGE EDUCATION

ORIENTE EVALUATION TIME LINE

Quezada Area	Program Year		
	1974	1975	1976
R	(119)	(112)	(+110)
RM	(118)	(109)	(+100)
RMA	(133)	(119)	(+115)
Total Interviewed	370	341	(+)325
Yupi Area			
Control	(136)	.....	.....
Yupi Area			
R	.....	(126)*	(+120)
RM	.....	(114)	(+110)
RMA	.....	(133)**	(+130)
Total Interviewed		373	(+)360
Ipala Area			
I - Control	.....	(139)	.....
Monitor	.....	.....	(+130)
II - Monitor	.....	(101)	(+95)
Total Interviewed		240	(+)225
Oriente Totals			
Respondents	506	953	(+)910
Interviews	1695	2553	(+)3420

*Includes 101 cases from Yupi 1974 (plus 25 new cases).

**Includes 30 cases from Yupi 1974 (plus 128 new cases).

BASIC VILLAGE EDUCATION

POPULATION BREAKDOWN BY AREA, TREATMENT AND VILLAGE

ORIENTE: YUPI

Program Year	CONTROL					
1974	Las Brisas	32			Estanzuela	31
	El Calvario	32				
	Pueblo Viejo	20				
	Aspitia	21				
			Total	136		

	R		RM		RMA	
1975	Las Brisas	40	El Llano	35	Estanzuela	35
	El Calvario	40	Sillon	50	La Ceibita	32
	Pueblo Viejo	23	Tetunte	16	Cerro Redondo	36
	Aspitia	23	El Sauce	13	La Perla	30
	Total	126	Total	114	Total	133
1976	Las Brisas		El Llano		Estanzuela	
	El Calvario		Sillon		La Ceibita	
	Pueblo Viejo		Tetunte		Cerro Redondo	
	Aspitia		El Sauce		La Perla	
	Total	+120	Total	+110	Total	+130

BASIC VILLAGE EDUCATION

POPULATION BREAKDOWN BY AREA, TREATMENT AND VILLAGE

ORIENTE: QUEZADA

Program Year	R		RM		RMA	
1974	Potrerillos	21	Sta Gertrudis	20	Las Quebradas	19
	Jicaro	31	Los Comunes	18	Don Diego	22
	Bordo Alto	20	La Brea	18	La Libertad	16
	Jocote	30	Salitrillo	28	San Fernando	39
	Rodeo	17	El Tule	34	El Retiro	37
	Total	119	Total	118	Total	133
1975	Potrerillos	19	Sta Gertrudis	19	Las Quebradas	16
	Jicaro	30	Los Comunes	17	Don Diego	19
	Bordo Alto	17	La Brea	14	La Libertad	15
	Jocote	30	Salitrillo	26	San Fernando	35
	Rodeo	16	El Tule	33	El Retiro	34
	Total	112	Total	109	Total	119
1976	Potrerillos		Sta Gertrudis		Las Quebradas	
	Jicaro		Los Comunes		Don Diego	
	Bordo Alto		La Brea		La Libertad	
	Jocote		Salitrillo		San Fernando	
	Rodeo		El Tule		El Retiro	
	Total	+110	Total	+100	Total	+115

BASIC VILLAGE EDUCATION

POPULATION BREAKDOWN BY AREA, TREATMENT AND VILLAGE

ORIENTE: IPALA

Program Year				
1974	--		--	
1975	I - Control		II - M	
	La Coronada	23	Cacahuatepeque	101
	La Granja	30	Total	101
	Las Cruces	32		
	El Jocote	31		
	El Chaguite	23		
	Total	139		
1976	I - M		II - M	
	La Coronada		Cacahuatepeque	
	La Granja		Total	+95
	Las Cruces			
	El Jocote			
	El Chaguite			
	Total	+130		

BASIC VILLAGE EDUCATION

OCCIDENTE EVALUATION TIME LINE

	Program Year		
Momos Area	**1974**	**1975**	**1976**
R	/.....	(133)	(+130)
RM	/.....	(150)	(+145)
RMA	/.....	(117)	(+115)
Total Interviewed		400	(+)390
Quiche Area			
I - Control	/.....| (121)	/.....|
Monitor	/.....	/.....	(+115)
II - Monitor	/.....	(87)	(+ 85)
Total Interviewed		208	(+)200
Occidente Totals			
Respondents	--	608	590
Interviews	--	1408	980

BASIC VILLAGE EDUCATION

POPULATION BREAKDOWN BY AREA, TREATMENT AND VILLAGE

OCCIDENTE: MOMOS

Program Year	R		RM		RMA	
1974	--		--		--	
1975	Pachomanchaj y/o Pachoquisis	24	Canquixaja Centro	79	Paquis	17
	Chicho y/o Paquix	23	Panca	33	Xesoclac	20
	Centro Tzanjon	30	Nimjutuj	38	Xelenawa	16
	Patrubala y/o Xealas	29	Total	150	Patzaquiche	30
	Chuaj	27			Racana	34
	Total	133			Total	117
1976	Pachomanchaj y/o Pachoquisis		Canquixaja Centro		Paquis	
	Chicho y/o Paquix		Panca		Xesoclac	
	Centro Tzanjon		Nimjutuj		Xelenawa	
	Patrubala y/o Xealas		Total	+145	Patzaquiche	
	Chuaj				Racana	
	Total	+130			Total	+115

BASIC VILLAGE EDUCATION

POPULATION BREAKDOWN BY AREA, TREATMENT AND VILLAGE

OCCIDENTE: QUICHE

Program Year		
1974	--	--
	I - Control	II - M
1975	Xepocol 67 Saquilla 54 Total 121	Chipaca 87 Total 87
	I - M	II - M
1976	Xepocol Saquilla Total +115	Chipaca Total +85

APPENDIX XI

1974 BASELINE/FOLLOW-UP INTERVIEW

INSTRUMENT: PREPARATION AND UTILIZATION

Robert Terzuola

Preparation

The questionnaire used this year for the baseline/follow-up interviews was a composite instrument constructed from the two 1973 questionnaires used in the original Baseline survey; consultations with our agricultural technical staff and information gleaned from the time sample interviews administered during 1974.

Individual questions on the original questionnaires were compared along with staff recommendations to help in the wording, coding and appropriateness of the new questions.

One of the prime tenets of this process was to keep the new questionnaire as similar as possible to the 1973 instruments in order to maintain as constant the general areas of information gathered as well as the specific information obtained in each area.

A number of questions and coded responses were added to this questionnaire which did not appear in the first series of instruments. These questions and codes fell into two general categories. The first being additions based on staff experiences during 1974 which augmented the information gained in 1973 either through different wording of question and more complete, accurate codes or through the addition of new questions and coded responses to investigate in greater depth the different areas of information.

The second category of additional questions and codes was concerned with the application of this instrument to the Occidente area. The addition of certain crops, practices and measurements eliminated the need for two separate interview instruments in the Occidente and Oriente.

For each question in the 1974 instrument all previous questions relating to that topic from all previous questionnaires (including time samples) and staff recommendation were compiled to extract as succinct and efficient wording as possible both in the actual question and in the individual codes. Questions which referred to production yields, land area or fertilizer use were supplied with spaces for the interviewer to write in the actual numbers related by the farmer. These data were later computed and post-coded after the interview according to a standard code expressed in terms of manzanas, quintales or cuerdas. (Some problems were encountered in 1973 about the size of a "cuerda" as it is not a standardized measurement of fixed area. To avoid these problems this year, especially between Occidente and Oriente where at least four possible measurements for a cuerda may be used, a space was provided in the questionnaire for the interviewer to record the measurement being used by the interviewer. This was later computed against a table of coded responses standardized for all possible measurement systems used in the areas (Appendix II). This system eliminated many of the problems of different measuring systems between the Oriente and the Occidente.)

Technical terms were replaced, wherever possible, with the common term used in the area of investigation. Of great value in this process was the extensive vocabulary list compiled by Astolfo Mellado, the 1974 time sample interviewer who had lived in the area all during the year.

The 1974 instrument used both ordinal as well as nominal coded responses. Efforts were made to insure that in the case of nominal questions all possible responses were represented in the codes. Where that was not possible due to the number of possible responses, the most likely answers were included as codes with the last response being reserved for an "other" category. In ordinal questions this same process was followed with the additional effort to insure that coded responses not only were technically correct in terms of agricultural recommendations but also that the codes were in the correct ascending order of desireability or correctness. The agricultural technical staff was largely responsible for this task.

After the composite questionnaire was prepared in draft form, it was reviewed by the EBR staff a number of times in order to pare it down and hone it into a more workable instrument. Criteria for this process included the ability of each question to measure change from the 1973 baseline survey; the relative importance of each item in the questionnaire and the ability of each question and code to elicit reliable information. (The length of the finished questionnaire was a deciding factor in a number of cases in which questions were eliminated from the draft instrument. It was generally felt that an interview of more than one hour or about 200-225 questions would be contra-productive for our purposes so that only the most precise and important questions were retained in the final questionnaire.)

Pre-Testing of Questionnaire in the Field

A near final draft of the instrument was reproduced in sufficient quantities to allow its use in the training of interviewers for the Occidente area. During the training, they familiarized themselves with the questionnaire through a series of exercises (see training report) and then pretested it in the field in a community within the general limits of the experimental area but outside of the actual communities to be included in the baseline survey.

Each interviewer did a minimum of three interviews giving us about thirty completed questionnaires.

The interviewers then made comments on the instruments' reliability and precision. A number of questions and codes were revised at this time to conform to their recommendations. The entire process was repeated during a second pretest period of about the same proportions during which time the instrument was further refined.

It was originally intended that the questionnaire be written both in the Spanish and Quiché languages as it was considered unlikely that the information elicited during the interview could be readily understood by the Indian farmers if only Spanish were used. The interviewers however (all of whom were fluent both in Spanish and Quiché) recommended that the questionnaire be prepared only in Spanish as written Quiché did not lend itself to the type of instrument being used. They felt more comfortable making the translation themselves during the interview. This also gave them more leeway to interpret concepts for the farmers who did not understand the precise meaning of some of the questions.

After the two pretests, the refined questionnaire was used for the baseline survey of the Occidente region in 1974.

Some additional minor changes were made before the instrument was pretested by the team of interviewers used in the Oriente region (see training report). It was also decided at this point that in addition to the numerical data obtained during the interview which referred to the area of land planted and fertilized and the total crop production, each interviewer would make a small diagram indicating the area planted in each different cropping system such as corn planted alone or interplanted with beans, sorghum, etc. This diagram greatly facilitated the interpretation of the numerical data.

The changes made in the qeustionnaire were largely additions or recoding of certain coded responses recommended by the interviewers during the three pretest periods. In some cases, the pretest enabled the staff to add codes in certain nominal questions where the same uncoded response appeared a number of times in the "other" category (Appendix IV).

Adjustment of Questionnaire Used in Occidente

Due to the fact that a number of changes (Appendix IV) were introduced in the questionnaire just prior to being used in the Oriente, those employed in the baseline survey of the Occidente therefore required minor adjustments in certain codes to assure that each question and coded response had precisely the same meaning and value for the two regions.

Occidente interviewers were employed for this task. Each questionnaire was reviewed by the team of interviewers and each of the revised questions was recoded and then checked by another interviewer.

The final stages of the questionnaire preparation was done in conjunction with interviewer training. The report on this is also included here.

APPENDIX XII

Occidente

A total of eight interviewers were selected out of fifteen candidates on the basis of bio-data information and personal interviews.

The interviews were held in San Cristobal Tetonicapan and were conducted both in Quiché and in Spanish. The interviewers were finally selected on the basis of personality, work experience in rural areas and fluency in Quiché.

The selection interviews were conducted by Robert Terzuola and Gordon Straub, field supervisors for Oriente and Occidente respectively, and Dr. Robert Carmack who managed the Quiché part of the interviews.

The training was designed to last for two full weeks as the questionnaire had not yet been field tested in its revised form. Two field tests rather than one were arranged to give the questionnaire a complete double review as well as to give the interviewers as much practice as possible in translating the concepts into Quiché.

Training began with group building games and general discussions.

Work with the actual questionnaire was begun almost immediately.

The entire form was read by the trainees and any questions they had were clarified. Practice was given very early when the trainees were paired off and interviewed each other in Spanish.

After reviewing the results of this practice and resolving doubts and problems, one central interview was held with all of the interviewers observing and recording the results on their own questionnaires. This interview was conducted by an agronomist experienced in the previous year's survey. His recorded answers were used as the key in checking the trainees questionnaires. Mistakes were discussed and further doubts were resolved in a general discussion since all of the responses had been taken from one interview and all responses should have been the same.

Later in the week, the trainees conducted interviews with each other in Quiché. The same system of one cultural interview and all recording responses was also used in Quiché.

The first field test was held in Momostenango and revealed some basic flaws in the coding of the questionnaires.

After resolving the problems with the instrument, the interviewers worked together in developing the techniques of translating the questionnaire into Quiché.

The interviewers recommended, after the first pre-test, that the questionnaire <u>not</u> be translated into written Quiché as this would restrict their ability to interpret the questions to the interviewee.

A second pretest was also held in Momostenango during the second week of training. By this time, the interviewers were fairly confident both in themselves and in the interview instrument. Few problems arose at this time although some changes were still pending in the questionnaire. Due to the time factor involved, sufficient questionnaires for the Occidente survey had been printed up before the second pretest. It was decided to use these questionnaire and to recode those few questions, where indicated, after the interviews.

During the training period, one interviewer was de-selected due to his inability to grasp some of the concepts involved in the survey. The remaining interviewers all performed satisfactorily in this respect.

Oriente

Due to the expansion in 1975 of the program in the Oriente, the total sample to be interviewed was doubled over the previous years. Given the increase in interviews plus the over-present time factor which allowed us to conduct the survey only at specific times, it was decided to increase the size of the interviewing team from eight to fourteen. They would be divided into two teams of seven, each team to have a leader who would conduct interviews as usual but who could also supervise the team in a community if necessary.

Training of this group was limited to one week but by this time the questionnaire had been used in the Occidente and most of the major bugs had been identified and worked out.

A pretest was arranged for the town of Asulco in Jalpatogua with the understanding that the information obtained would be made available to the agronomist working there.

Training of this group followed the same pattern as that of the Occidente training only in a shorter time frame.

One interviewer was eliminated during the training period due to his lack of proper attitude.

Selection of the Oriente interviewers was basically the same as that of the previous year's and of the Occidente interviewers but with no Quiché being required.

Two interviewers from the Occidente team were selected to be the team leaders in the Oriente because of their practical experience with the questionnaire and with the problems of supervising an interview team in the field.

APPENDIX XIII

OFFICE PROCEDURES USED FOR CHECKING, RE-CODING AND TABULATING QUESTIONNAIRE (Appendix III)

1. Questionnaires were received from field in envelopes marked by community. The envelopes were then placed in boxes by sub-area.

To each envelope and box was attached a control card which was to be initialed and dated at the completion of each stage of the operation. (Appendix I)

2. Two interviewers who were also certified accountants did the computations on the fertilizer / production questions where the field interviewers had only written in actual quantities, leaving the standard codes to be post-coded after computation.

Those doing the computation worked as a two-man team, one reading the data while the other made the computations on a small electronic calculator. The answer was written below the code space for each question.

3. After the team had finished a complete envelope (generally one complete community) they switched roles to check the computations. If the answer was not the same as the first, they both re-did the questions independently until the answer matched both times. Only then was the answer compared to the standard code list and the correct code written in the appropriate space.

4. After all questionnaries in one box (one complete sub-area) were computed and coded, the box passed on to a team of interviewers, each of whom was responsible for the re-coding of one question in each of the questionnaires in the box. (This recoding is explained above. To re-iterate, some of the codes were changed after the instrument was used in the occidente baseline survey. Also, two questions had their codes added to after the survey was completed in the Oriente. These questions were all re-coded on all questionnaires in order to maintain uniformity between the two survey regions).

5. The questionnaires were passed on to another team after the re-coding process. (questionnaires were always moved from team to team in complete envelopes, never separately, to avoid losing them within other communities) This team was responsible for checking each of the re-coded responses, checking special attention questions (see below) and giving the questionnaire its first complete check.

(Special attention questions were those which gave internal indications of the reliability of the responses. An example of this would be where two or more different questions elicited the same or similar responses.)

6. After this checking process, all of the questionnaires were passed on to still another team which performed the second complete checking of the questionnaires.

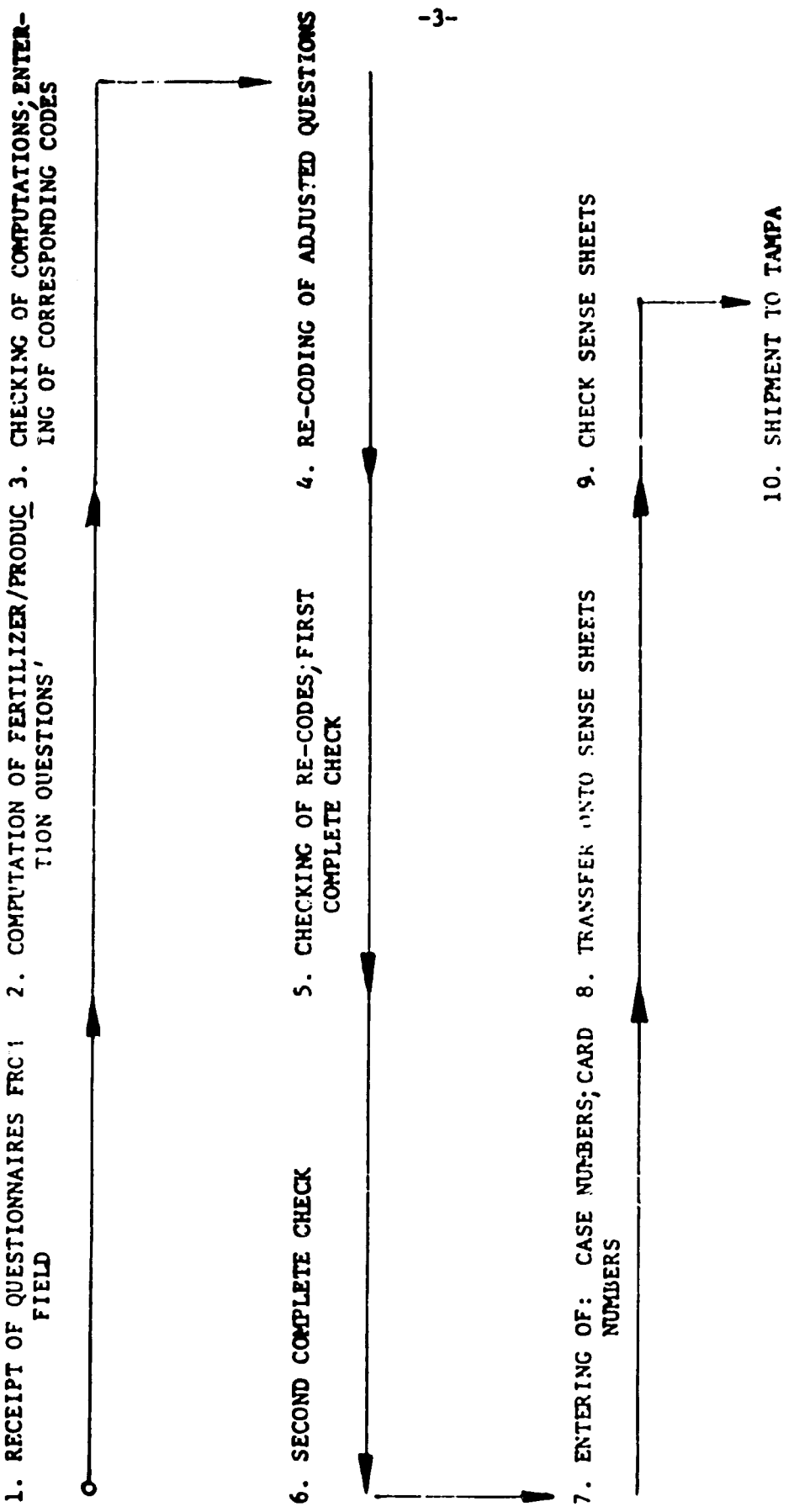
7. After the second check was completed, a team was applied to placing the correct case numbers and card numbers on the questionnaires (in order to save time, the checking of this step was not taken as a separate stage but rather incorporated into the tabulation process)

8. After all of the above steps had been completed on an entire box, it was passed on to a team of two interviewers who then transferred the coded responses on the questionnaires onto sense sheets. As they began and finished each sense sheet, they automatically checked that the case and card number were properly recorded on the questionnaire.

Sense sheets were then placed in separate envelopes by community and in the same order as the questionnaires.

9. After an entire box of questionnaires had been transferred to sense sheets, another team (not the same which did the tabulation) checked each entry and code of each questionnaire. Any errors were corrected immediately and the total number of errors recorded on the sense sheet envelopes.

10. Packages of sense sheets, by community, were then packed for shipment to Tampa and computer analysis.



APPENDIX III. OFFICE PROCEDURES USED TO CHECK, RE-CODE AND TABULATE QUESTIONNAIRES