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REPORT ON FORMATIVE EVALUATION

CTTA - PERU

Shakir Hussein, Ph.D.
Research Associate (ACT)

Martha Cruz
Evaluation Field Director (ACT)

José Ignacio Mata
Project Director (AED)

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Applied Communication Technology
1010 Doyle Street, Suite 17
Menlo Park, California 94025
(415) 322-6466

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CHAPTER I

INTRODUCTION

A. INTRODUCTION

1. The CTTA Project

This report is based on formative evaluation data collected at the CTTA project site in Peru. The CTTA (Communication For Technology Transfer in Agriculture) Project is an innovative communication project financed by United States Agency for International Development. It is being implemented by the Governments of Peru and some other developing countries with technical assistance from the Academy for Educational Development.

The CTTA Project pursues the development of a low cost integrated multi-channel communication strategy for the effective transfer of available and underutilized agricultural technologies to farmers in developing countries. The strategy is initially developed and tested at a pilot site in each participating country, and when perfected it would be extended to other areas in each of these countries and eventually become an integral part of the institutionalized strategy for technology transfer. The strategy development process comprises the following nine stages:

a. Developmental Investigation,

b. Design of the strategy and materials,

c. Testing the strategy concept and materials,

d. Materials production,

e. Delivery,

f. Audience reception,

g. Formative evaluation,

h. Summative evaluation,

i. Ongoing monitoring.

Training and support are also ongoing and concurrent functions carried out by the CTTA Project.

2. What is Formative Evaluation?

Formative evaluation is the use of research methods during the life of a project to determine how well the project is doing

at any particular time. The information collected usually facilitates decision making related to project improvement. Formative evaluation determines the strengths and weaknesses of the implementation process, and whether the elements of a program are functioning efficiently as planned. It includes, but is not limited to, measurements that determine whether the messages have been disseminated as planned, whether they have been appropriate to the local situation, whether they have been acceptable to the target audience, and to what extent they have been believed and acted upon. Measurements also determine, among other things, the percentage of the audience that received the messages, percentage of the audience that can recall the information they received, percentage of the audience that used the information, and sources of the information they received. It also elicits the target audience's opinions on the utility of the information they received, and their impressions of the results they obtained from using the information.

Formative evaluation may also be required to determine how well the objectives are being met, or the extent of changes produced to date. In this case it may be thought of as a mini summative evaluation. Its data may be compared with that of a preceding developmental investigation to obtain an interim diagnosis of the extent of progress achieved, and to identify areas that are performing poorly. Formative evaluation can thus provide managers with useful information to guide timely corrections or adjustments in an ongoing program.

3. Conducting the Formative Evaluation

The main objective of a formative evaluation is to assist the implementors in deciding whether changes are needed in the implementation process, e.g., whether certain activities need strengthening or modification, whether investments should be concentrated on selected channels, etc. For these types of decisions quantitative information is most useful. As a result, the most common type of research method used in formative evaluation is a survey with an intermediate size sample. The need for quantitative data can be appreciated, for example, if one desires to assess the penetration being achieved by the print media component supporting an intervention. Part of the concern here would be the need to plan the investment in print versus other channels in the remainder of the project and part would be to diagnose how well the print distribution system is functioning. A survey would determine the proportion of the target audience receiving messages from the various channels used, and so allows one to select the channel that shows the greatest promise. Decision to increase the support given to a channel so identified may follow.

However, survey is not the only appropriate data collection method used in formative evaluation. Dependent on the question

to be answered, one might use observational methods, direct participation, focus groups, informant surveys, direct measurements, etc. The best approach may be a combination of survey and one or more anthropological methods.

Obtaining formative evaluation results quickly is often an important factor. The increase use of micro-computers greatly reduces the time previously needed to process survey data, and as a result the popularity of surveys in formative evaluation is expected to increase correspondingly.

B. BACKGROUND INFORMATION

The data formally reported herein were collected in Peru during December, 1988, by the CTTA Director in that country with assistance from ACT's Evaluation Field Director who is also located in Peru. The design of the survey and the development of the data collection instrument were their responsibilities.

1. Location of Data Collection

The data were collected in the Sector of Marcara located in the Agency of Carhuaz. Carhuaz is located in the Department of Ancash[1] which is located 400 kilometers from Lima in the Callejon de Huaylas - a valley located in the Andes, at an altitude of 2800 meters, between the two mountain ranges Cordillera Blanca and Cordillera Negra.

Marcara is the first site of the CTTA Project and it comprises 5 communities: Copa Chico, Recuayhuanca, Siete Imperios, Shumay, and Vicos. Data were collected from all five communities:

2. Sampling and Data Collection

A sample of 184 farmers was selected from the list of voters available for Marcara. The selection was made at random using random numbers, and the sample was distributed among the five communities in proportion to their population in the following way: Copa Chico 31, Recuayhuanca 30, Shumay 26, Siete Imperios 34, and Vicos 63; 98.9 % of the sample were male farmers.

Data were collected during the second week of December, 1987. Review of the questionnaires and coding were done by Nelly

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[1] For purposes of agricultural administration, Peru is divided into several Departments, which are subdivided into Agencies. The Agencies are further subdivided into Sectors. A sector may comprise two or more Communities.

Palacios, Rural Sociologist of the Office of Technical Communication, INIIA. Data entry was done during the second week of January, 1988. All the above activities were conducted in Peru.

3. Processing of Data

The data were processed at ACT's Home Office. The initial processing of the data was done in February, 1988, in order to identify incorrect and inconsistent entries and to obtain frequencies of the 'unclean' data. The list of errors and printout of frequencies were sent to Peru for corrections and preliminary use respectively.

Data cleaning and analyses were done in March, 1988. The results were immediately made available to the project director in Peru and is hereby reported formally.

C. STRUCTURE OF THE REPORT

Immediately following this introductory chapter is an outline of the messages disseminated by the project through various communication channels. In Chapter III the socioeconomic characteristics of the farmers interviewed are presented. Chapter IV deals with the evaluation of the messages with respect to audience reception, recall of recommendations, and use of recommendations. Chapter V discusses the relative penetration of the various communication channels used, and Chapter VI summarizes the main findings.

D. ACKNOWLEDGEMENTS

ACT wishes to thank the United States Agency for International Development, especially the Offices of Education, Agriculture, and Rural Development of the Bureau for Science and Technology and their Mission in Lima, Peru. Without their financing the CTTA project would not have been possible. ACT also acknowledges the invaluable support of AED in Washington provided by Dr. Howard Ray and Mr. Edwin Tout of CTTA's Home Office. In addition, ACT is thankful for the excellent cooperation received from INIPA (The National Institute of Agricultural Research and Extension) through its Office of Technical Communication in Lima and Huaraz, Peru. The Director of this office, Mr. Arguelles, and the Rural Sociologist Ms. Nelly Palacios, were especially helpful.

CHAPTER II

THE MESSAGES

A. THE MESSAGES DISSEMINATED

During the first phase of technology transfer, CTTA project concentrated on the promotion of improved agricultural practices for corn and potato. It also promoted the use of soil analysis to determine the fertilizer needs of farmers' plots. The specific recommendations disseminated are listed below.

1. Corn

   a. How to sow corn?
   Recommendation: Sow corn in furrows.

   b. What planting distances to use for corn?
   Recommendation: Sow corn seeds 60 cm between plants and 80 cm between rows.

   c. How many times should corn be fertilized?
   Recommendation: Two times.

   d. When should corn be fertilized?
   Recommendation: At sowing and at first hilling. Or alternatively at first and second hillings.

   e. What fertilizers should be used for corn?
   Recommendation: Fertilizers containing nitrogen (urea or nitrate of ammonia), phosphorous (triple superphosphate) and potassium (potassium chloride). All the phosphorous and potassium and half of the nitrogen required should be applied at the first application. The remaining half of the nitrogen should be applied at the second application.
   Information on the quantities of fertilizers needed for irrigated cultivation, for dry land cultivation, and for different varieties on irrigated or dry land, were also provided.

   f. How to control gusano cogollero?
   Recommendation: Apply a few dipterex 2.5 % granules by hand at

the inner base of the uppermost leaves when one or more out of every five plants shows symptoms of attack.

g. How to mix and apply pesticides?
Recommendation: Put required amount of pesticide in a bucket of water and stir well with a stick. Pour mixture into sprayer and fill with additional water. Spray in the direction of the wind early on a dry day preferably when there is little or no wind. Do not eat, smoke, or drink when applying pesticides. After application wash hands thoroughly with soap.

h. When and how to hill soil (aporque)?
Recommendation: Hill soil at 40-45 days after sowing. Apply the required fertilizer(s) on that side of the plant with higher elevation and pull soil to form a high hill around the trunk of the plant.

2. Potato

a. How to prepare soil?
Recommendation: Use three crosses.

b. How to prevent potato pests (gusano de tierra, papa kuru, polilla, and piki piki)?
Recommendation: Mix seeds with volaton powder at time of sowing. When plants have sprouted a few leaves, spray with gusathion-three tablespoonfuls per sprayer. Also, apply gusathion 2 days before first and second hilling. Also, apply volaton granules around trunk of plants at second aporque.

3. Soil Analysis

a. How to take soil samples?
Recommendation: Take samples from each corner and from the center of the plot. Mix and put in a plastic bag and send or carry to CIPA, in Huaraz, or to the Agricultural University at Molina.

B. THE MESSAGES EVALUATED

All of the messages disseminated were not evaluated. Those evaluated were:

1. Sowing of corn.
2. Planting distances of corn.
3. Number of times to fertilize corn.
4. When to fertilize corn.
5. Types of fertilizers for corn.
6. Control of gusano cogollero.
7. Soil preparation for potato.
8. Pests prevention for potato.
9. How to take soil samples.

CHAPTER III

SOCIOECONOMIC CHARACTERISTICS OF FARMERS

Socioeconomic data is useful in determining the type of audience the project was reaching. A relevant question commonly asked is whether the project was servicing the larger farmers who normally also possess or have greater access to the needed resources. The answer to this question is important since the project aims to service all farmers equally. Also, data from the formative evaluation are comparable with that of the developmental investigation only if the socioeconomic characteristics of the farmers sampled are similar.

In this formative evaluation, information on the following were collected: age; family size; level of schooling; family literacy; and area of crops cultivated with corn, potato and wheat. The areas cultivated with each crop were summed to obtain crop-hectares cultivated by each farmer. Summaries of the socioeconomic data collected are presented below.

A. AGE

The majority of farmers (69.1 %) interviewed in the formative evaluation was younger than 46 years (Table 1). The mean and median ages of all farmers interviewed were 41.9 and 40.0 years respectively. Similar statistics from the developmental investigation were 71.1 % under 46 years, and 40 and 38 years for mean and median ages. The two samples therefore do not appear to be statistically different with respect to age.

B. FAMILY SIZE

The majority of farmers (63.4 %) had families of five or more members including themselves (Table 2). The mean and median family sizes of all farmers in the sample were 6 (i.e. 5.6) and 5 respectively. Similar statistics for the developmental investigation were 69.1 % families with 5 or more members, and 5 and 5 for mean and median family sizes.

C. LEVEL OF SCHOOLING AND FAMILY LITERACY

Almost 40.0 % of all farmers in the sample did not attend school (Table 3), but about 91 % had households with one or more literate members (Table 4). Similar statistics for the developmental investigation were 46.9 % without schooling, and 87.7 % with households with one or more members who could read.

Table 1: Distribution of Farmers' Ages

Age (years)	% Distribution
16 - 25	8.2
26 - 35	27.7
36 - 45	23.2
46 - 55	15.2
56 - 65	7.1
> 65	8.7
	100.0 (N=184)

Table 2: Distribution of Farmers' Family Sizes

Size of Family	% Farmers (n=183)
1 - 2	3.8
3 - 4	32.8
5 - 6	32.3
7 - 8	24.0
> 8	7.1
	100.0

Table 3: Distribution of Farmers' Levels of Schooling

Level of Schooling	% Farmers (n=183)
None	39.9
Primary	58.5
Secondary	1.6
	100.0

Table 4: Distribution of Family Literacy

Number of Literate Family Members	% Farmers (n=183)
0	9.3
1 - 2	58.5
3 - 4	22.4
5 - 6	6.5
7 - 8	2.8
> 8	0.5
	100.0

D. LAND TENURE

About one half of the farmers (54.3) operated communal lands and the other half (45.7) operated their privately owned land.

In the developmental investigation similar statistics were 60.7 % communal and 36.9 % individual.

E. CROP-HECTARES CULTIVATED

Farmers were also asked how much land they cultivated for each crop they planted. These areas were summed to obtain the total area cultivated by each farmer for that cropping year. The distribution of these areas are given in Table 5. This table shows that only 2.7 % of the farmers were cultivating 0.2 ha or less, 17.9 % were cultivating 0.5 ha or less, 23.9 % were cultivating from 0.51 to 1.00 ha inclusive, and the remainder 53.2 % were cultivating more than one hectare. The mean and median areas cultivated were 1.4 ha and 1.1 ha respectively.

Similar statistics for the developmental investigation were 21.4 % with 0.2 ha or less, 45.1 % with 0.5 ha and less, 21.4 % with between 0.51 and 1.00 ha, and 33.3 % with more than 1.00 ha. The mean and median areas cultivated were 1.02 ha and 0.6 ha respectively. Visually it appears that the farmers in the formative evaluation cultivated larger cumulated areas than those in the developmental investigation.

TABLE 5: Crop-Hectares Cultivated by Farmers
(Sum of area cultivated for all crops)

Area (Crop-ha.)	% Farmers
< 0.1	0.0
0.11 - 0.20	2.7
0.21 - 0.30	3.8
0.31 - 0.40	6.5
0.41 - 0.50	4.9
0.51 - 1.00	23.9
1.01 - 2.00	34.2
2.01 - 3.00	13.6
3.01 - 4.00	3.8
> 4.00	1.6
Missing	4.9
	100.0 (N=184)

CHAPTER IV

EVALUATION OF THE MESSAGES

A. WHAT WAS EVALUATED?

The messages/recommendations were evaluated with respect to reception, recall, and use by the target audience. Henceforth in this report messages and recommendations are inter-changeable.

1. Audience Reception

All farmers were asked whether they heard the recommendations for each of the nine practices on which information was disseminated. The percentages that heard and that did not hear the messages/recommendations disseminated for corn, potato, and soil analysis are shown in Table 6. The proportions of the audience that received the different messages range from 10 % for soil analysis to 70 % for soil preparation for the cultivation of potato. More than 50% of all farmers surveyed heard the recommendations for: sowing of corn, corn planting distances, number of times to fertilize corn, types of fertilizers to use for corn, and soil preparation for the cultivation of potato. Also, control of gusano cogollero was heard by almost 50 % of The audience. In effect, 7 of the 9, or 78 % of the recommendations were received by more than 50 % of the target population during the first phase of the technology transfer process.

2. Use of Recommendations

All farmers who said they heard the recommendations were also asked whether they used the recommendations. The distribution of farmers by use of the recommendations is shown in Table 7. All recommendations except those for the control of gusano cogollero and soil sampling were reportedly used by more than 70 % of the farmers who heard the recommendations. Those for control of gusano cogollero and taking of soil samples were used by 48 % and 50 % of the farmers who heard these recommendations respectively. These "adoption" rates are very impressive for a project in its first year.

3. Correct Recall of Recommendations

Each farmer, for every recommendation he heard, was asked to state what the recommendation said. Their responses were compared with the correct recommendations listed in Chapter II and the percentages of farmers that recalled the recommendations correctly were determined. These are shown in Table 8 for each recommendation.

Correct recall varied between 1.4 % for pest prevention for potato and 97 % for sowing of corn. Large percentages of farmers were unable to recall several recommendations correctly. The simpler the recommendation the more recallable it was. The most complex of the recommendations was undoubtedly pest prevention for potato and it was the most difficult to recall correctly.

Table 6: Diffusion of Recommendations

RECOMMENDATIONS	% DISTRIBUTION OF FARMERS*	
	Heard recommendation	Did not hear recommendation
1. Sowing of corn	56.0	44.0
2. Planting distances - corn	61.4	38.6
3. How often to fertilize corn	58.7	41.3
4. When to fertilize corn	54.9	45.1
5. Types of fertilizers for corn	57.1	42.9
6. Control of gusano cogollero	45.1	54.9
7. Soil preparation for potato	69.6	30.4
8. Pest prevention for potato	38.0	62.0
9. How to take soil samples	9.8	90.2

*N=184

4. Correct Recall versus Use of Recommendation

Of the farmers who heard the recommendations, the percentages that recalled the recommendations correctly and also used the recommendations were determined; these were considered

to have used the recommendations correctly. These percentages are shown in Table 8.

If farmers used the recommendations as they recalled them, then large percentages of farmers who heard the recommendations were not using them correctly. For example, of the farmers who heard the recommendation for corn planting distances, 70.8 % said they were using it (Table 7); but only 26.5 % were using the correct distance between plants, and 28.3 % were using the correct distance between rows (Table 8). Similar differences exist for pest prevention for potato (78.6 % vs 1.4 %), control of gusano cogollero (48.2 % vs 37.3), types of fertilizers for corn (71.4 % vs 41.0 %, and 71.4% vs 61.0 %, for first and second application respectively) etc..

Table 7: Use of Recommendations by Farmers Who Heard the Recommendations

RECOMMENDATIONS	% DISTRIBUTION OF FARMERS WHO HEARD RECM.		
	Used recommendation	Did not use recommendation	N
1. Sowing of corn	77.7	22.3	103
2. Planting distances - corn	70.8	29.2	113
3. How often to fertilize corn	79.6	20.4	108
4. When to fertilize corn	70.3	29.7	101
5. Types of fertilizers for corn	71.4	28.6	105
6. Control of gusano cogollero	48.2	51.8	83
7. Soil preparation for potato	79.7	20.3	128
8. Pest prevention for potato	78.6	21.4	70
9. How to take soil samples	50.0	50.0	18

With respect to planting distances, the data indicate that of the farmers who heard the recommendation, 57.5 % recalled closer than recommended distances for between plants, and 51.3 % recalled closer than recommended distances for between rows. This seems to indicate that these farmers had a general idea that

Table 8: Correct Recall vs Use of Recommendations by Farmers Who Heard Recommendations

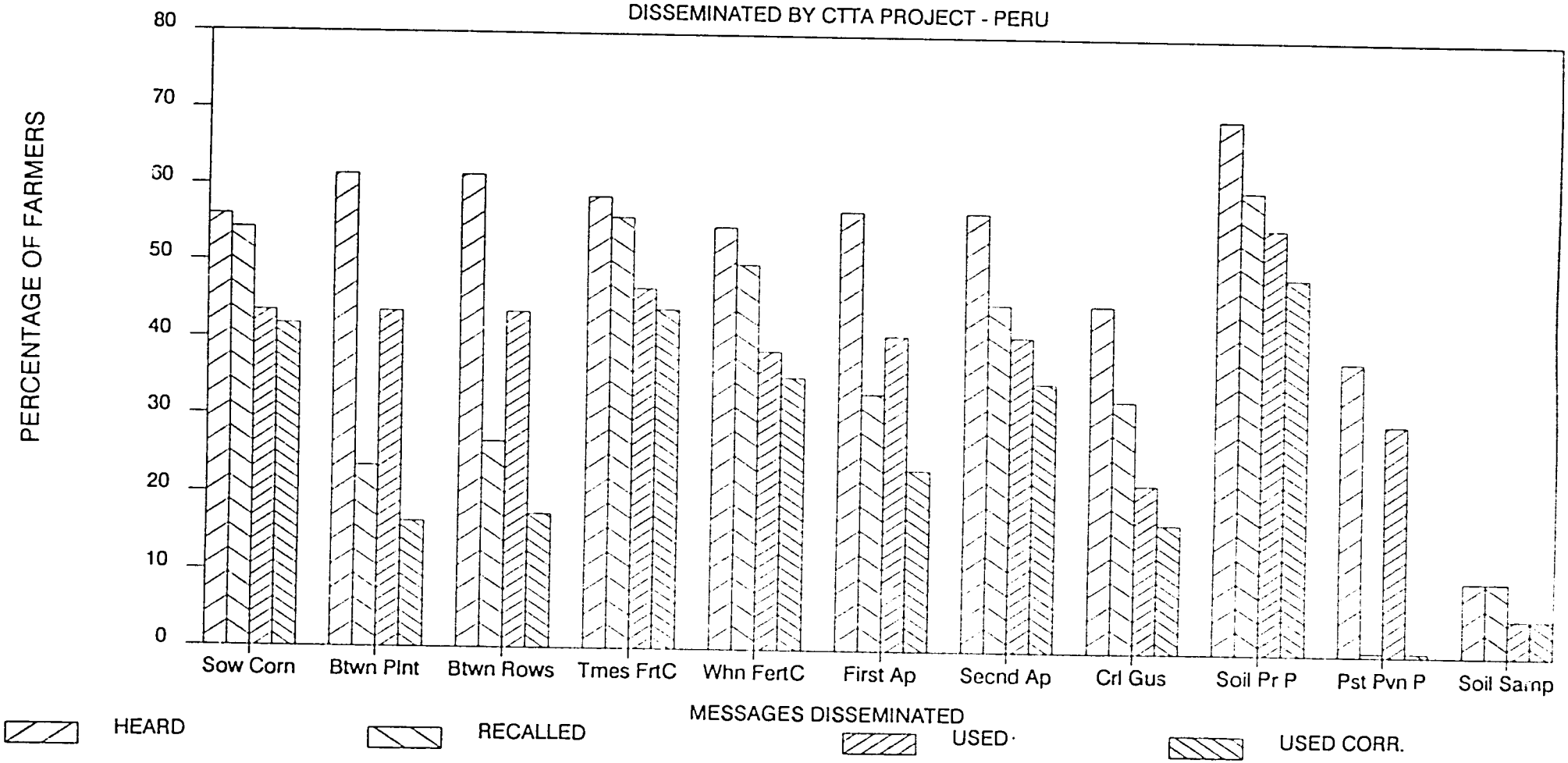
RECOMMENDATIONS	% DISTRIBUTION OF FARMERS WHO HEARD RECM.		
	Correctly recalled recom.	Correctly used recom.	N =
1. Sowing of corn	97.1	74.8	103
2. Planting distances - corn			
a) between plants	38.1	26.5	113
b) between rows	43.4	28.3	113
3. How often to fertilize corn	95.4	75.0	108
4. When to fertilize corn			
a) at sowing and first hilling	50.5	27.7	
b) at first and second hilling	40.6	36.6	
c) total	91.1	64.3	101
5. Types of fertilizers for corn			
a) 1st application	58.1	41.0	105
b) 2nd application	79.0	61.0	105
6. Control of gusano cogollero	72.3	37.3	83
7. Soil preparation for potato	86.7	70.3	128
8. Pest prevention for potato	1.4	1.4	70
9. How to take soil samples	88.9	50.0	18

closer planting distances were recommended but they did not know the exact recommendations

Table 9: Summarized Evaluation of Recommendations Disseminated

RECOMMENDATIONS	% DISTRIBUTION OF FARMERS (N = 184)			
	Heard recom.	Correctly recalled recom.	Used recom.	Use recom. correctly
1. Sowing of corn	56.0	54.3	43.5	41.8
Planting Distances for corn:				
2. a) between plants	61.4	23.4	43.5	16.3
3. b) between rows	61.4	26.6	43.5	17.4
4. How often to fertilize corn	58.7	56.0	46.7	44.0
5. When to fertilize corn	54.9	50.0	38.6	35.3
Types of fertilizers for corn:				
6. a) 1st application	57.1	33.2	40.8	23.4
7. b) 2nd application	57.1	45.1	40.8	34.8
8. Control of gusano cogollero	45.1	32.6	21.9	16.8
9. Soil preparation for potato	69.6	60.3	55.4	48.9
10. Pest prevention for potato	38.0	0.5	29.9	0.5
11. How to take soil samples	9.8	9.8	4.9	4.9

FIG. 1: FORMATIVE EVAL. OF MESSAGES



5. Summarized Evaluation of the Recommendations Disseminated

The data presented in this chapter is summarized in Table 9. This Table provides percentages of the total sample that: heard the recommendations, correctly recalled the recommendations, reportedly used the recommendations, and used the recommendations correctly. The data in Table 9 are also presented graphically in Fig. 1.

6. Comparison with Developmental Investigation

Similar data were not collected in the developmental investigation. However, although types of fertilizers for corn were not separated for the different applications, some cautious comparison may be made. The developmental investigation data showed that only 1.8 % of the farmers were using fertilizers that supplied the recommended elements - nitrogen, phosphorous, and potassium - compared to the 41.0 % in the formative evaluation data. Also in the developmental investigation only 2.4 % indicated that they used a second application of fertilizer as opposed to 61 % that correctly used a second application of fertilizers in the formative evaluation. This is an impressive improvement in the farmers' fertilizing practices, and it was achieved within a relatively short time.

CHAPTER V

COMMUNICATION CHANNELS

A. COMMUNICATION CHANNELS USED

The recommendations were disseminated to the farmers by radio, extension agents, leaflets, the agricultural bank, the agricultural university, and a non-governmental rural development organization called CEDEP. Within the communities the information was also disseminated among farmers by the community leaders, friends, neighbors, and family. However, the main channels were radio, leaflets, and the extension agents. 69.6 % of the farmers indicated that they owned radios, and 63.0 % said that they heard Don Hilaco, the radio character, created by the project, who uses local dialects and local cultural situations to disseminate agricultural information to farmers. Also, 34.2 % of the farmers said they received agricultural leaflets (62 % of whom received leaflets from the extension agent, and 36.5 % from the community leaders).

Each farmer, for each recommendation heard, was asked to indicate the source(s) from which he heard or received the said recommendation. These responses are tabulated for all sources and for all recommendations in Table 10. This Table shows that radio, extension agent, and leaflet were the more important sources of the recommendations farmers received. It also shows that radio was the most important source for all recommendations. The importance of radio is more visible in Table 11 which shows the relative importance of the communication channels for all farmers who received the recommendations. Radio provided two of the recommendations to more than 70 % of the receivers, three other recommendations to more than 60 %, and three other recommendations to more than 50 %. For only one recommendation (taking of soil samples) did radio reach less than 50 % of the farmers who heard of it. For all recommendations except one, radio reached many more farmers than the extension agent. For four recommendations radio coverage was more than twice that of the extension agent, and for one it was six times larger. Also, leaflets were almost as important as extension agents.

The percentage of farmers that received information on one or more recommendation from each channel was also determined. The results (Table 12) show that radio was reaching 63 % of all farmers[2] in the sample, extension agent 36.4 %, and leaflets 23.4 %. Family and neighbors/friends also were comparatively

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[2] If a farmer received information from radio on any of the recommendation in Table 10, he was included in this percentage. The percentages for the other channels were similarly determined.

Table 10: Farmers' Sources of Information on Agricultural Practices

SOURCES	% DISTRIBUTION OF FARMERS BY AGRICULTURAL PRACTICES (n=184)								
	Sowing of corn seeds	Planting distances - corn	Times to fertilize corn	When to fertilize corn	Types of fertilizers for corn	Control of Gusano Cogollero	Soil Preparation for potato	Pest Prevention for potato	How to take soi samples
Radio	40.8	40.2	33.2	31.0	33.2	34.2	42.9	22.8	3.3
Extension agent	17.9	18.5	22.8	21.7	21.2	5.4	18.5	9.8	3.3
Leaflet	16.3	15.8	15.2	14.1	14.7	6.0	10.3	9.2	1.1
Friend/neighbor	4.3	5.4	6.5	5.4	3.8	7.1	7.6	2.7	0.5
Family	4.3	9.8	12.5	14.7	11.4	4.9	14.1	9.8	1.1
CEDEP	---	---	---	---	---	---	1.1	0.5	---
University	---	---	---	0.5	1.1	0.5	0.5	0.5	0.5
Community	0.5	0.5	---	0.5	---	---	---	---	---
Agri. bank	0.5	0.5	0.5	0.5	0.5	---	0.5	1.1	---
Received no information	44.0	38.6	41.3	45.1	42.9	54.9	30.4	62.0	90.2

NOTE: Farmers gave multiple responses to each question. The total percentage of farmers who received information from all sources would include double or triple counting dependent on the number of sources used.

Table 11: Use of Information Sources by Farmers Who Received Agricultural Information

SOURCES	% DISTRIBUTION OF FARMERS BY AGRICULTURAL PRACTICES (TN=184)*								
	Sowing of corn seeds	Planting distances - corn	Times to fertilize corn	When to fertilize corn	Types of ferti-lizers for corn	Control of Gusano Cogollero	Soil Pre-paration for potato	Pest Pre-vention for potato	How to take soil samples
Radio	72.8	65.5	56.5	56.4	57.1	75.9	61.7	60.0	33.3
Extension agent	32.0	30.1	38.9	39.6	37.1	12.0	26.6	25.7	33.3
Leaflet	29.1	25.7	25.9	25.7	25.7	13.3	14.8	24.3	11.1
Friend/neighbor	7.8	8.8	11.1	9.9	6.7	15.7	10.9	7.1	5.6
Family	7.8	15.9	21.3	26.7	20.0	10.8	20.3	25.7	11.1
CEDEP	---	---	---	---	---	---	1.6	1.4	---
University	---	---	---	1.1	1.9	1.2	0.8	1.4	5.6
Community	1.0	0.9	---	1.1	---	---	---	---	---
Agri. bank	1.0	0.9	0.9	1.1	1.0	---	0.8	2.9	---
	(n=103)	(n=113)	(n=108)	(n=101)	(n=105)	(n=83)	(n=128)	(n=70)	(n=18)

*TN = Total number of farmers in the sample.

important sources with coverage of 32.1 % and 21.7 % of all farmers respectively.

The combined coverage of radio, extension agent, and leaflets of the multi-channel communication strategy was providing information on one or more recommendations to 76 % of all farmers in the sample.

B. FARMERS' OPINION OF RECOMMENDATIONS

1. Clarity of Messages

All farmers who received agricultural information from Don Hilaco were asked whether the messages were clear. 94.8 % of these farmers thought they were clear. Those farmers who received leaflets were asked about their difficulties in understanding them, and 90.6 % of those who read the leaflets thought that they were easy to understand.

Table 12: Farmers use of each channel for one or more recommendation

Communication Channel	% of all farmers that received information on one or more recommendation (N = 184)
Radio	63.0
Extension Agent	36.4
Leaflets	23.4
Neighbors/Friends	21.7
Family	32.1

2. Utility of Messages

All farmers who received messages from Don Hilaco were asked whether the messages were usable, and 90.5 % thought they were. This question was not asked of those who received leaflets.

3. Application of Messages

All farmers who received agricultural information from Don Hilaco and from leaflets were asked whether they used the information on their farms. 60.3 % of those who received information from Don Hilaco and 46.0 % of those who received leaflets said that they used the information on their farms.

C. COMPARISON WITH DEVELOPMENTAL INVESTIGATION

In the developmental investigation, information on communication channels was not collected separately for each agricultural practice. Farmers were only asked if they listened to the agricultural radio programs, whether they received technical assistance, and the sources of any technical assistance they received. The data showed that 34.1 % of all farmers interviewed then were listening to the agricultural radio program - Amanecer Campesino, and 15.8 % of all farmers had received visits from technical officers (extension agents and others). In the formative evaluation, 63 % of all farmers in the sample obtained information on one or more recommendations from radio; and 36 % of all farmers in the sample obtained information on one or more recommendation from the extension agent. These formative evaluation percentages are twice as large as those for the developmental investigation. This seems to indicate that the project has been influential in improving the delivery of information by radio and extension agents.

Nevertheless, it can be concluded that the extension agents were still reaching a very small percentage of the farmers. In order to make the multi-channel communication strategy effective extension agents have to increase their contact with farmers in order to provide additional information on, and explanation of, the more complex recommendations. In many cases demonstrations may also be necessary.

D. FARMERS' PREFERENCE FOR COMMUNICATION CHANNELS

All farmers were asked through what communication channel they would like to receive agricultural information in the future. Their responses are tabulated in Table 13.

The majority of farmers preferred leaflets and radio. It is surprising that only 8.1 % would like to receive information from extension agents. Could it be that this reflected farmers' uncertainty of receiving information from extension agents, or their lack of credibility in the extension service? Whatever this may signify, it reflects badly on the extension service.

Table 13: Farmers' Preference for Communication Channels

Communication Channels	% Farmers (N=184)
Radio	64.1
Leaflet	89.1
Extension agent	8.2
Magazines	6.0
Family	1.1
Veterinarian	0.5
No one	1.1

CHAPTER VI

CONCLUSION

One of the objectives of the CTTA project is to develop, test, and demonstrate a multi-channel communication strategy for the transfer of agricultural technology to farmers. The data shows that the combination of channels used was reaching about 50 % of the farmers, with the exception of how to take soil samples. However, this was approximately at the end of the first year of the project, and 50 % coverage of the audience with most of the messages can be considered a worthwhile achievement.

Recall of the content of the recommendations was reasonably good except for planting distances for corn, first application fertilizers for corn, and the prevention of pests on potato. These however were more complex recommendations and more difficult to remember. The project may need to expend more effort on the more complex recommendations.

Most farmers who heard the recommendations said they were using them. The specifics of what they were using were interpreted to be what they recalled for each recommendation. When these were compared with the correct recommendations it was found that many farmers were using the recommendations incorrectly. However, this was more so for the more complex and difficult to remember recommendations. This seems to indicate that in addition to receiving information via radio and leaflets, farmers needed further contact with credible and knowledgeable persons to promote the correct use of the recommendations.

Three of the main channels used were radio, leaflets (and other written materials), and the extension agent. The data shows that of these three channels radio was the most effective in reaching farmers with the messages and that extension agents and other technical officers were making contacts with relatively small percentages of the farmers. Radio and leaflets can reach a large percentage of the farmers but their effectiveness in transferring technology is more or less inversely related to the complexity of the technology being transferred. This was somewhat evident in the data. Large percentages of the farmers who heard the recommendations were able to recall the simpler messages correctly, and much smaller percentages correctly recalled the more complex messages. In addition to receiving the messages by radio and leaflets, many farmers would need further information and explanation on the application of the recommendations. Also, many farmers would like to have their questions and doubts about the efficacy of a recommended practice settled before using it. In such cases there is little that can be substituted for contact with extension officers or other credible and knowledgeable persons. For this reason, for the multi-channel communication strategy to be more effective,

extension officers' interaction with more farmers would have to increase.

Much of the data in the formative evaluation could not be compared with similar data in the developmental investigation because similar data were not collected in the latter. This normally is not a problem except where persons associated with the project wish to obtain an interim idea of the nature of the achievements to date.

Finally, it can be said that the project has made considerable progress for its first year. The formative evaluation has also identified channels that are working well, and messages that need other efforts beside radio for effective transfer. Working on improving the multi-channel approach rather than concentrating on any one channel may produce the best results in the long run.

APPENDIX I

QUESTIONNAIRE

PROYECTO DE COMUNICACION PARA LA TRANSFERENCIA DE TECNOLOGIA

EN AGRICULTURA C.T.T.A

EVALUACION FORMATIVA

DATOS GENERALES Instrumento No._____

Encuestador: _____ Fecha: _____

Comunidad: _____ Sector: _____

1.- Edad: _____ 2.- Sexo: M____ F____ 3.- Nivel educativo: _____

4.- ¿Cuántas personas son en su familia? _____

5.- ¿Cuántas personas en su familia saben leer? _____

6.- ¿Cuántas parcelas ha sembrado usted de:

Cultivo	No. de Parcelas	Tipo de Propiedad	Extensión Total	Cantidad de Semilla
MAIZ				
PAPA				
TRIGO				
OTROS				

7.- Tiene usted radio?

1. SI ____ 2.- NO ____

8.- ¿Ha recibido alguna hoja como ésta?(ENCUESTADOR: Mostrarle una hoja)

1. SI ____ 2. NO ____

9.- ¿Ha escuchado o recibido ultimamente alguna información sobre cómo hay que sembrar el maíz?

1. SI ____ 2. NO ____ (PASE A LA PREG/ No 14)

10.- ¿Cómo o de quién lo ha recibido o escuchado? (ENCUESTADOR: Leerle las alternativas)

1. Radio _____
2. Sectorista _____
3. Hoja _____
4. Vecino o amigo _____
5. Familiar _____
6. Otro (ESPECIFIQUE): _____

11.- ¿Cómo decía la información que hay que sembrar el maíz)

1. Por surcos _____
2. A cola de buey _____
3. Otro (ESPECIFIQUE): _____

28

12.- ¿Ha sembrado usted segun el consejo?

1. SI_____ (PASE A PREGUNTA 14) 2. NO_____

13.- SI DIJO NO . ¿ Por que no ha sembrado así? _____

_____

_____

14.- ¿Ha escuchado o recibido ultimamente alguna información sobre a qué distancia entre surcos y entre plantas hay que sembrar el maíz?

1. SI _____ 2. NO _____ (PASE A LA PREG. 19)

15.- Cómo o de quién lo ha recibido o escuchado? (ENCUESTADOR: Leerle las alternativas

1. Radio _____
2. Sectorista _____
3. Hoja _____
4. Vecino o amigo _____
5. Familiar _____
6. Otro (ESPECIFIQUE) _____

16.- ¿A qué distancia entre surcos y entre plantas decía la información que hay que sembrar el maíz?

1. Entre plantas: _____
2. Entre surcos: _____

17.- ¿ Ha usado usted esa distancia entre surcos y entre plantas para sembrar?

1.SI _____ (PASE A LA PREGUNTA 19) 2. NO_____

18.- SI DIJO NO. ¿Por que no ha usado esa distancia para sembrar?_____

_____

_____

19.- ¿Ha escuchado o recibido ultimamente alguna información sobre cuántas veces hay que fertilizar el maíz?

1. SI _____ 2. NO _____(PASE A LA PREG. 24)

20.- ¿Cómo o de quién lo ha escuchado o recibido? (ENCUESTADOR: Leerle las alternativas)

1. Radio _____
2. Sectorista _____
3. Hoja _____
4. Vecino o amigo _____
5. Familiar _____
6. Otro (ESPECIFIQUE) _____

21.- ¿Cuántas veces decía la información que hay que fertilizar el maíz?

1. Una vez _____
2. Dos veces_____
3. Tres veces _____
8. No sabe _____

22.- ¿ Ha fertilizado usted ese número de veces?

1. SI_____(FASE A LA PREGUNTA 24) 2. NO_____

23.- SI DIJO NO. ¿Por que no ha fertilizado usted ese numero de veces?

_____

_____

24.- ¿ Ha escuchado o recibido ultimamente alguna información sobre cuándo hay que fertilizar el maíz?

1. SI _____ 2. NO _____(FASE A LA PREG. 29)

25.- Cómo o de quién lo ha escuchado o recibido? (ENCUESTADOR: Leerle las alternativas)

1. Radio _____
2. Sectorista _____
3. Hoja _____
4. Vecino o amigo _____
5. Familiar _____
6. Otro (ESPECIFIQUE) _____

26.- ¿ Cuándo decía que hay que fertilizar el maíz,esa información?(ENCUESTADOR: Puede marcar varias alternativas)

1. A la siembra _____
2. Al primer aporque _____
3. Al segundo aporque _____
8. No sabe _____

27.- Ha fertilizado usted en esa forma?

1. SI_____(FASE A PREGUNTA 29) 2. NO_____

28.- SI DIJO NO. ¿ Por que no fertilizo usted asi? _____

_____

_____

29.- ¿Ha escuchado o recibido ultimamente alguna información sobre que tipo de fertilizantes hay que usar para el maíz?

1. SI _____ 2. NO _____ (FASE A LA PREG. 34)

30.- ¿Cómo o de quién lo ha escuchado o recibido? (ENCUESTADOR: Leerle las alternativas)

1. Radio _____
2. Sectorista _____
3. Hoja _____
4. Vecino o amigo _____
5. Familiar _____
6. Otro (ESPECIFIQUE) _____

31 .- ¿Qué tipos de fertilizantes decía la información que hay que usar para el maíz? (ENCUESTADOR: Leerle)

En la primera fertilización: 1. _____

2. _____

3. _____

8. No sabe _____

En la segunda fertilización: 1. _____

2. _____

3. _____

8. No sabe _____

32.- ¿ Ha usado usted esos fertilizantes?

1. SI_____(PASE A LA PREGUNTA 34) 2.NO_____

33.- SI DIJO NO/ ¿ Por que no ha usado usted esos fertilizantes?_____

_____

34 .- ¿Ha escuchado o recibido últimamente alguna información sobre cómo se controla el gusano cogollero del maíz?

1. SI _____ 2. NO _____ (PASE A LA PREG. 39)

35 .- ¿Cómo o de quién lo ha escuchado o recibido? (ENCUESTADOR: Leerle las alternativas)

1. Radio _____
2. Sectorista _____
3. Hoja _____
4. Vecino o amigo _____
5. Familiar _____
6. Otro (ESPECIFIQUE) _____

36 .- ¿Cómo decía la información que hay que controlar el gusano cogollero del maíz?

a. ¿Qué producto (remedio) hay que usar?_____

b. ¿Cómo hay que aplicarlo? _____

_____

37.- Usó usted este consejo para combatir el gusano cogollero del maíz?

1. SI _____ (PASE A LA PREG/39) 2. NO _____

38.- Si dijo NO, ¿por qué no lo usó?

_____

_____

.31

39.- ¿Ha escuchado o recibido últimamente alguna información sobre cómo hay que preparar la tierra para la siembra de papa?

1. SI _____ 2. NO _____(PASE A LA PREG. 44)

40.- ¿Cómo o de quién lo ha escuchado o recibido? (ENCUESTADOR: Leerle las alternativas)

1. Radio _____
2. Sectorista _____
3. Hoja _____
4. Vecino o amigo _____
5. Familiar _____
6. Otro (ESPECIFIQUE); _____

41.- Cuántas cruzadas decía la información que hay que dar para una buena preparación del terreno para sembrar papa?

Número de cruzadas: _____

No sabe; _____

42.- Dió usted ese número de cruzadas?

1. SI _____ (PASE A LA PREG. 44) 2. NO _____

43.- Si dijo NO, ¿por qué no lo hizo así?

_____

_____

44.- ¿Ha escuchado o recibido últimamente alguna información sobre cómo hay que evitar las plagas de papa?

1. SI _____ 2. NO _____ (PASE LA PREG. 49)

45.- ¿Cómo o de quién lo ha escuchado o recibido ? (ENCUESTADOR: Leerle las alternativas)

1. Radio _____
2. Sectorista _____
3. Hoja _____
4. Vecino o amigo _____
5. Familiar _____
6. Otro: (ESPECIFIQUE) _____

46.- ¿Qué decía la información que hay que hacer para evitar las plagas en el cultivo de papa?

a. ¿Qué productos(remedio) hay que usar? _____

b. ¿Cómo hay que aplicarlos? _____

47.- Siguió usted la recomendación para evitar las plagas en el cultivo de papa?

1. SI _____ (PASE A LA PREG. 49) 2. NO _____

48.- Si dijo NO, ¿por qué no la siguió?

_____

_____

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49 .- ¿Ha recibido alguna información últimamente sobre el análisis de suelos?

1. SI _____ 2. NO _____(PASE A LA PREG/ 54)

50 .- ¿Cómo ha recibido la información? (ENCUESTADOR: Leerle las alternativas)

1. Radio _____
2. Sectorista _____
3. Hoja _____
4. Vecino o amigo _____
5. Familiar _____
6. Otro (ESPECIFIQUE) _____

51 .- ¿Qué decía la información sobre el análisis de suelos?

_____

_____

52.- ¿Ha hecho usted el análisis de suelo?

1. SI _____(PASE A LA PREG.54) 2. NO _____

53.- ¿Por qué no lo hizo?

_____

_____

MEDIOS DE COMUNICACION

54 .- ¿Ha escuchado a Don Hilaco dar información sobre agricultura en la radio?

1. SI _____ 2. NO _____(PASE LA PREG. 71)

55 .- ¿En qué radioemisora lo ha escuchado? _____

56 .- ¿A qué horas lo ha escuchado? _____

57 .- ¿Qué consejos o informaciones de las que da Don Hilaco recuerda? ESPECIFIQUE LO MAXIMO POSIBLE.

_____

_____

58 .- ¿Le parecen útiles los consejos o informaciones que da Don Hilaco?

1. SI _____ 2. NO _____ (PASE A LA PREG. 60)

59 .- Si dice SI por qué? _____

_____

60 . Si dice NO por qué? _____

_____

61.- ¿Le parecen claros los consejos que da Don Hilaco?

1. SI _____ 2. NO _____ (PASE A LA PREG 63)

62.- Si dice SI por qué? _____

_____

63.- Si dice NO por qué? _____

_____

64 - ¿Cree usted que los consejos o informaciones que da Don Hilaco se pueden aplicar?

1. SI _____ 2. NO _____(PASE A LA PREG. 66)

65.- Si dice SI por qué? _____

_____

66.- Si dice NO por qué? _____

_____

67.- ¿Ha usado alguno de los consejos o informaciones que da Don Hilaco?

1. SI _____ 2. NO _____ (PASE A LA PREG/70)

68.- ¿Qué consejos ha usado? ESPECIFIQUE LO MAXIMO POSIBLE.

_____

_____

69.- ¿Qué resultados le dieron los consejos que usó?

1. Buenos resultados _____
2. Regulares resultados _____
3. Ningún resultado _____
8. No sabe _____

70.- Si dice NO ¿por que no ha usado los consejos?

_____

_____

71.- ¿ Ha recibido usted alguna hoja de estas últimamente?

1. SI _____ 2. NO _____(PASE A LA PREG. 83)

72.- ¿Cuántas hojas ha recibido? _____

73.- ¿Quién se las ha entregado ?

1. El Sectorista _____
2. El Delegado del Sector _____
3. El vecino o amigo _____
4. Otro (ESPECIFIQUE) _____

74.- Cuando le entregaron la hoja, ¿le explicaron de qué trataba?

1. SI _____ 2. NO _____

75.- La ha leído o se la han leído?

1. SI _____ 2. NO _____

76.- ¿Le ha parecido fácil o difícil entenederla?

1. Fácil _____ (PASE A LA PREG. 79) 2. Difícil _____

77.- ¿Qué es lo que le parece difícil? _____

_____

78.- ¿Por qué le parece difícil? _____

_____

79.- ¿Ha usado alguno de los consejos que dicen las hojas?

1. SI _____ 2. NO _____ (PASE A LA PREG. 82)

80.- ¿Que consejos ha usado ? _____

_____

81- ¿Qué resultados le dieron los consejos qué usó?

1. Buenos resultados _____
2. Regulares resultados _____
3. Ningún resultado _____
8. No sabe _____

82.- Si dice NO, ¿por qué no ha usado los consejos?

_____

_____

83.- Le gustaría recibir (o seguir recibiendo) esta clase de hojas?

1. SI _____ 2. NO _____

84.- Cómo le gustaría más recibir la información:

1. Por radio _____
2. Por las hojas _____
3. Por los dos medios _____
4. Por ninguno de los dos _____
5. Por otro medio (ESPECIFIQUE) _____

85.- ¿De qué cosas le gustaría recibir informaciones o consejos ?

_____

_____

_____

¡¡¡¡MUCHAS GRACIAS!!!!