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RURAL CREDIT INSURANCE RESEARCH PROGRAM 1980-1981

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ANNEXES

RURAL CREDIT INSURANCE RESEARCH PROGRAM 1980-1981

1. INTRODUCTION

The main purpose of this report is to highlight major points of interest in order to stimulate discussion about what is becoming the most significant component of IICA/AID Latin American Rural Credit Insurance Project. This document is an outline of the methodological basis and field activities programmed to implement the research program. Such a program must, throughout the years of the project, address at several questions of particular value for evaluating existing programs, expanding crop credit insurance throughout Latin America, and other developing areas.

The rural credit insurance project is now in full operation in Panama, where the activities began in early 1979. An insurance agency began its operations in Bolivia in early March of this year and field activities are programmed to begin in July. The law to create the insurance agency has been issued in Ecuador and it is hoped that the program will begin late in May. Research and training programs are being negotiated in Mexico, yet actual field work and data processing will begin only in May and June.

Research activities began in October of 1979 when the research coordinator was hired. The past six months have been spent in setting up the methodological basis, organizing the working team, designing the field data generation process and creating the computer programs for research data management. Each one of these aspects is fully discussed later in regard to its current status in each country and the perspectives for 1980 and 1981.

2. THEORETICAL AND METHODOLOGICAL BASIS

There is no doubt that the job to be done is challenging and most interesting. Continuous thinking about the issues to be analyzed together with group discussions of alternative methodological approaches and strategy for work have lead us to develop a conceptual framework for analysis at four levels: 1) the farm; 2) the insurance agency; 3) the banking system and 4) the rural sector as a whole.

2.1. Implications at the Farm Level

At the farm level, decisions are made in an environment of uncertainty; yet farmers chose among alternatives and produce to satisfy basic needs and to generate income. The riskiness involved in a set of choices of investment alternatives is handled by farmers in several ways which include complete avoidance of the risky enterprises, diversification of alternatives with negative or low positive correlation in their returns and, if the danger of disaster is considerable, some will opt for crop insurance or alternatively credit insurance.

Of particular relevance is the fact that the adoption of modern, high/input-yield technologies is limited by two major elements: Firstly, the expected output is known with less certainty than that of traditional technologies and it is usually asserted that the variability in yields under non-optimal conditions is greater. Given the degree of farmers' risk aversion, these elements restrict a rapid adoption and use of modern technologies, particularly hybrid seeds, fertilizers and chemicals. Secondly, the use of these

inputs, demands capital that small farmers can not provide on their own and that banks are not willing to lend because of numerous reasons; mainly because the target farmers may not be 'sujetos de crédito' because they cannot offer adequate guarantees, the cost of operating the credit program may be too high and the recuperation rate too low.

If a farmer who borrows money for cropping activities suffers a disaster and loses the harvest, he usually can not pay back the loan unless he is able to sell off some productive resources. Besides the immediate catastrophic effect of not having enough food and income, a more dramatic effect is that not having paid the loan, the farmer will not be able to obtain credit from the bank for the next year, thus being forced to recur to alternative, more expensive resources of credit, or else diminish the intensity of use of inputs, and regress to less modern technology. Another equally counterproductive option is to return to production with a reduced area under cultivation.

On similar grounds, the improvement of livestock demands capital which is borrowed on favorable terms, yet involves a high risk of loss if the animal dies or loses its functions. This long term investment is necessary to increase the productivity of animals, yet farmers are reluctant to bear the risks and banks are unwilling to finance the investment.

Production Credit insurance has been created as a device that protects the farmer by insuring the money he has borrowed from the bank. Many would say that it actually protects the bank and in a way this is true; but it protects the bank so it can loan again to the farmer.

The establishment of the program could have numerous effects at the farm level and the research activities are designed to explore the magnitude of

those effects and under what circumstances they take place. If the program is not compulsory, some farmers would choose to purchase credit insurance as one of the alternatives open to them. But also they could develop their own protection mechanism against risk, which may include crop and technology diversification. In this later case however, the farmers will absorb the cost of the wrong decision. Given that insurance has a cost (the premium) to the farmer; it is hypothesized that farmers would pay that cost if the expected benefits are greater. Clearly it all depends on the farmer's own perception of risks and his past experience. A program that is not compulsory would provide the most suitable environment for analyzing the costs and benefits of credit insurance and the effects on the farmers' attitudes, mix of crops and technologies, use of inputs and the resulting income stream over time.

However, the credit insurance program is now being promoted as an obligatory device for obtaining public credit. The reasons are twofold: First, if the program is not compulsory many farmers will not purchase the insurance because they "feel" that they do not need it. Secondly, if some farmers would not have insurance, the bank will not lend to them, because it also "feels" that it is taking a risk that is too high. This way of operating the programs leads to some complications in analyzing the effects of credit insurance in changing the farmers' attitudes. However, there is still room to analyze the overall effect on the composition of the portfolio of the farm; the use of inputs; the allocation of time and the level of income, and the evolution of these variables over time.

Clearly, since the program is a means for redistributing benefits between good and bad years; the research should look at the 'evolution of farmers', in

terms of their attitudes, capitalization, income, improvement of quality of life, etc. To appraise the benefits of the program it is necessary to compare farmers within the program against a control group of those not included, whether they have credit or not. The methodology to generate information to make possible the analysis of these issues is fully discussed below. In summary it implies continuously generating and analyzing information among farmers within and outside the project in specific areas.

The analytical methods of researching these issues are:

- a) models of the farm-firm household unit, based on actual information, to measure and predict the effects of insurance in conjunction with other programs. A linear programming model has already been designed and tested with 'figured' data. Field data will be "plugged in" in the near future.
- b) Without insured credit, including also those that do not use credit at all. Besides making annual comparisons, it is more important to examine the evolution of farmers from year to year, particularly under the occurrence of natural disasters.

2.2. Implications for the Insurance Agency and the Banking System

The reasons for limited expansion of credit to small farmers are widely documented. The strongest arguments, from the banks' point of view, are too high administration costs, too low productivity and management, high exposure to risks and low capacity to repayment. Under these arguments, there are specific actions that could be taken to expand credit to small farmers in order to move them out of their marginality.

It is hypothesized that credit insurance could be an efficient mechanism to assist in the expansion of credit to small farmers. Insuring the credit allows the banks to solve at least part of their problem; that of recovering their investment in the event that because of natural risk, farmers lose their harvest and are unable to pay back the loan. On the other hand, farmers will receive from the insurance agency, complementary technical assistance, which would in turn help to increase the marginal returns on credit.

It is clear that insured credit brings benefits for the bank and under some conditions, benefits the farmer. The question is, to what extent the costs of running an insurance program (including the costs paid by farmers) are smaller than the benefits. Certainly the insurance agency must develop its own capacity to manage the program to minimize the probability of default; i.e., it must take a portfolio management approach to its investments (insurance operations) so as maximize the economic and social benefits of extending the program to larger numbers of small farmers within the parameters of actuarially expected outcomes which will keep the program financially solvent. Here again, if this program is compulsory at a national level the insurance agency has limited power to discriminate, but it does have the capacity to establish premiums and coverage levels according to actuarial principles.

One year or one cropping season with a positive or negative balance for the insurance agency is not enough to conclude whether the program has produced net benefits or not. As it was mentioned before, the program tries to establish a retribution mechanism for good and bad years, hence any cost-benefit analysis must be made on a long term basis.

The basic elements of judgement for the agency to administer its portfolio are the degree of variability that characterizes each of its investment alternatives and the correlation between the expected outcomes of all alternatives open. On this basis the agency can "integrate" its portfolio in a way that it fulfills national social and economic goals, subject to behavioral and managerial constraints. Government intervention of price support and price stabilization programs, etc, would affect the composition of the insurance portfolio and the outcome of the management strategy.

Given these basic issues, it can be asserted that the insurance agency must possess the analytical tools for determining premiums and coverages and for managing its portfolio. It must also develop statistical information on the historical behavior of yields as well as on the probability of occurrence of the disasters against which it is insuring. The data needs and procedures for generating it, are discussed in the following section.

- In terms of the analytical tools the two elements must be developed:
- A statistical-actuarial methodology to calculate the premiums and coverages on the basis of historical data, when available; and
 - A portfolio management model for the insurance agency and for the bank, which allows both institutions to appraise the costs and benefits of extending insurance to particular regions, groups of producers, crops, technologies and livestock species. Progress is underway to structure this model, which could in general terms, be applied to any bank-insurance agency pair; but with specific data and behavioral constraints for each particular country.

2.3. Sectorial Effects of Insured Credit

Although the program is beginning on a small scale in each country; it is anticipated that it may grow rapidly, particularly in Panama. If such is the case, it is most desirable to model or simulate the possible effects the insurance program have, when applied at a national scale either for a particular crop or for several crops. Later, the simulated effects can be compared to actual outcomes. This "feedback" can be used both to refine the model and to modify the strategy of work and create the most appropriate conditions.

Credit insurance may grow at a national level either because the banking system demands compulsory credit insurance or because farmers find it attractive and economically desirable and voluntarily take credit insurance. The effects of a national program are worth examining in light of the following rationale: Because farmers are now using credit (more than otherwise) for the acquisition of inputs they will require greater amounts of inputs and, since they will increase per hectare yields and areas planted, this will cause increases in production.

It has been repeatedly pointed out that credit is not the sole problem for rural development; the opportune supply of inputs is perhaps as important. If under the existing conditions, the supply of inputs is already deficient and their prices are already too high, it is expected that unless proper policies and programs are implemented, additional credit availability which results in a higher demand for inputs, would imply significant disequilibrium in the input market, thus rising prices. The situation may turn even more serious and would leave some farmers unable to obtain the basic inputs as fertilizers, fuel, chemicals, sacks and even labor or transportation.

From the product market point of view, the increase in prices in areas planted may result in excess production, thus a decrease in prices at harvest time. The implications are that unless the guaranteed prices are enforced with the governments absorbing any excess production, farmers would receive returns that are below the ones originally anticipated. The net effect may be positive for consumers (and certainly for intermediaries), yet farmers may lose.

Other effects to be considered in large scale programs are, for example the increased demand for foreign exchange to purchase inputs (fertilizers, chemicals, tractors, etc.) in the international markets. Likewise, the increased availability of foreign exchange due to exports of agricultural products. It may also occur that profitability of crops changes with the use of credit insurance, thus moving larger numbers of farmers towards the more profitable crops at the expense of areas of other crops, thus creating sectorial disbalance in their markets. The scarcer crops may have to be imported at even higher costs.

Again in this case; as at the farm level or the insurance agency level; there is need for an analytical framework of analysis. Given the multiple relations in the agricultural sector, it may be necessary to build a sector model. This will be justified only if the program is expected to grow at a significant rate.

3. DATA GENERATION AND MANAGEMENT

Without real data, the analytical framework developed is of limited use. Thus, a significant effort is underway to compile existing historical information and to generate as much data as needed. The latter comes from ad-hoc surveys and from the ongoing insurance operations.

3.1. Historical Data

Historical yield data is the key element to calculate basic premiums on coverage levels. This data should be available at the greatest level of disaggregation to make possible the specification of premiums for each crop, by regions, technologies and groups of farmers. This data is usually not published in such form, however, it can be found in the offices of Statistics and organized and processed for computer based statistical analysis. Complementary historical information is required from weather data to calculate the probability of occurrence of the disasters against which the insurance is issued.

One of the first activities undertaken in each country where the program begins is identification, organization and processing of this type of information. The activities have already begun in Panama where we are organizing data for the period 1962-1978 about yields of the main crops now being insured by ISA, disaggregated by crop cycle; farm size; farmers strata and province. Similar efforts will be undertaken in the other countries. It may be however that the data just does not exist, as it seems to be the case in Bolivia. As soon as the program officially begins in Ecuador a similar approach will be undertaken.

3.2. Cross Section Surveys

There is need to characterize an area before it is incorporated in the program. Also, there is need to continuously analyze the evolution of the area during the years of the program. Such type of work means knowing enough about farmers that are receiving credit with insurance, those receiving credit but not insurance and finally those that do not receive either. This would allow comparisons between farmers over time to see how each group evolves in their attitudes, cropping patterns, resource use and ultimately income and well-being. This would in turn make possible the appraisal of benefits and costs of the program. This data will also be the basic input for the models of farm behavior.

For such purposes, once an area has been chosen, a survey will be run to characterize it. The format of the survey is made as general as possible to apply it in each of the countries where the program is to be implemented. The format will be tested in May in Panama and in July in Bolivia. As other areas are incorporated they will also be surveyed and characterized. Similar 'follow up' surveys over the same group of farmers will be run every year; thus creating in this way a Data Bank of cross section data over time.

The questionnaires emphasize socio-economic and agronomic information. Data is collected on characteristics of the farm unit; characteristics of the household head and its family; income by source and expenses by destination; ways of producing each of all crops and cattle raising activities; sources, amounts and conditions of credit and technical assistance; and other relevant data that make possible modeling a farm-household unit, and allow for comparisons among groups.

A questionnaire contains approximately 200 variables and the number of questionnaires needed to obtain a representative sample, varies depending on the size of the area; generally ranging between 50 and 200 respondents.

3.3. Insurance Operations Data

As part of the insurance operations, a massive amount of data is generated for each individual in the program. In other crop insurance programs as Mexico, the data generated was quite complete only in terms of the information for the crop insured by those farmers that reported a disaster (siniestro). This information however is of little use because it tells nothing about those farmers that were insured but not affected by a disaster, thus it does not make possible an appraisal of the evolution of farmers. On the other hand it says nothing about the farm i.e. what else was being grown and how. (To complement these data some surveys will be run when the research program is implemented there).

To computerize the data generated as part of the insurance operations, a coding and a format have been designed; hopefully to be used in all countries. This is presented in Annex A, for those that read Spanish. Handling and analysis of this data and other generated along the research activities is discussed in the following section.

3.4. Research Data Management

Data management for a project of the dimensions of this one, can not be made without access to proper computer facilities and without the aid of the

adequate software. Even if the project covers only three countries (Panama, Ecuador and Bolivia) plus research activities in Mexico, the amount of data to be generated and processed each year is large enough to demand processing by electronic means.

It is convenient at this point to identify two levels of management: a) in the countries, where the main concern is data processing for routine insurance management and; b) in the headquarters of the research program where alternative methodologies are to be tried; different tests to be performed and where the use of sophisticated statistical and optimization programs is indispensable.

Given the dimensions of the program in Ecuador and Bolivia in its earlier stages, there is no need for a local computerized management of the data. However it should be produced and organized in a way that it is transferable to the headquarters of the research program to facilitate the research activities. In the case of Panama, where the program is entering its fourth-year (the second with IICA's support) and where ISA is now issuing about one thousand policies per crop cycle (two thousands per year) there is need for their own computerized system of data management. With this consideration, a small computer (Hewlett Packard 45B) has been ordered by ISA.

Management of the data for the research activities is handled at IICA's computer center in San Jose. The center has an IBM-360/40 machine with 240 K bites of memory, a group of well trained technicians and the appropriate software for advanced statistical and optimization work.

Among the later, the center makes intensive use of the SAS program (Statistical Analysis System) for all data processing, sorting, grouping, analysis of variance, multiple regression, etc.; recently the center also rented the MPSX program (Mathematical Programming System Extended) which is the basic tool for optimization procedures needed in the implementation of farm and sector behavioral models. All the data is being organized in a Disc Unit File for direct access with SAS and MPSX.

4. WORK STRATEGY FOR 1980-1981

For the countries included (Mexico, Panama, Ecuador, and Bolivia) and given the existing budget for research activities; the later are planned according to what is discussed below. If other countries are incorporated in the project of IICA with their corresponding research budget; the strategy can be developed to design their research program and its linkages with the existing multinational scheme.

4.1. Working Team

To implement the program, the research team is integrated by:

- a. A full time Research Specialist, based in San José and responsible for the coordination of all research activities;
- b. Three technical level Research Associates, with the equivalent degree of a BS or Licenciado en Economía. These technicians have already been hired in Panama and Bolivia. Their responsibility is basically data gathering, primary processing and cooperation with the operational activities of the program. As time goes and their skills develop, they will participate more actively in the analytical work. To assist in data processing, management and analysis, a technician has also been hired on a half time basis in IICA's headquarters.

c. Consultants to orient the analytical work and to do specific jobs. Annually they all add to approximately 200 expert-days. One of the consultants, now helping to organize the research program in Mexico, will be hired on a full time basis (as Research Specialist) as soon as the Mexican program is put in full operation; hopefully towards September of this year.

d. Field Personnel, to assist on specific surveys and data processing, who are national technicians hired on a "job specific" appointment.

e. The project relies heavily on the insurance agencies field specialists for data gathering and on IICA's computer center staff for data processing.

4.2. Program of Activities

The program officially begins in each country when the insurance agency is created and the government signs an agreement with IICA. By this time one or more areas have been tentatively selected for the implementation of the insurance program. It is at this point that as part of the research-operation activities, the area must be 'characterized'. Thereafter the procedures imply gathering existing historical data (yield and weather); and processing that material and establishing premiums and coverages. In a parallel way the researcher in the insurance agency contributes to the design of the various documents issued along the insurance operations (see Annex A) and organization of the data files. At the end of each crop cycle a new survey must be run to evaluate the effects of the program and to make the comparative analysis.

Simultaneously, the development of analytical procedures and methodologies and processing of the data collected in the countries, goes on in the

headquarters. As a result of this work there are specific products that have implications for the operational program in each country. Also, since this work implies the development of new methodologies, analytical procedures and experiences these must be shared with the international community working in related issues. With this later objective in mind, there will be a continuous production of 'research papers' and the program intends to sponsor an International Conference on Rural Credit Insurance, late in 1981.

4.3. International Cooperation

The originality of the issue has stimulated interest among professionals working on related problems within IICA, and also in other international groups. It is most desirable to benefit from ongoing projects that analyze the problems of the rural poor, particularly those related to the administration of rural credit; the transfer of technology to farmers; the establishment of price support and price stabilization programs.

Within IICA the research program promotes continuous communication with the PROTAAL project (Cooperative Research About Agricultural Technology in Latin America); about methodological issues. It also communicates with PIADIC (Central American Program of Agricultural Information) and it is expected that the survey to be undertaken in Panama will be a cooperative effort. In the countries the program maintains close liasson with current activities on research and institutional support.

At the international level the research program has began negotiations to establish cooperation with USAID, FAO, IFPRI (The International Food Policy Research Institute) and some American universities. From this cooperation the program will derive expertise and hopefully joint research endeavors of mutual interest.

4.4. Program of Activities for 1980-1981

It is anticipated that in general terms the following sequence will be completed during 1980-1981:

A. Developing the Conceptual Framework

- A.1 Formulation of the Basic Conceptual Framework and Work Strategy;
- A.2 Design of a Basic Rural Household Behavior Model, applicable in several countries
- A.3 Design of a Basic Bank-Insurance Portfolio Management Model applicable in the small country cases;
- A.4 Developing the Basic Methodology for Determination of Differential Premiums and Coverages with aggregated Data;
- A.5 Design a Methodology to Appraise Costs and Benefits of Credit Insurance at Different Levels.

Headquarters B. Generation and Organization of Statistical Data

- B.1 Design of a Computer-Based System for Management of the Insurance Data in the countries (for immediate application in Panama);
- B.2 Design and Organization of the Research Data Management System at IICA's Computer Center;
- B.3 Design and Test of the Field Questionnaire to characterize and evaluate farmers in areas where the project is to be (or being) implemented.

Panamá

- B.4 Organize and Analyze existing three year data (1977-79) of insurance operations for three crops and livestock in ISA;
- B.5 Organize and Analyze Existing Historical Yield and Weather Data (1960-1978) at the Dirección de Estadística;
- B.6 Determination of Differentiated Premiums and Coverages for Maize, Sorghum, Rice and Beans;
- B.7 Run the First Surveys to Characterize of grain producers in the Province of Chiriquí (June 1980) and for tomato producers in the provinces of Coclé and Los Santos (July 1980).
- B.8 Run the Second Survey of Evolution of Farmers in the Provinces of Chiriquí, Coclé and Los Santos (June 1981)

Bolivia

- B.9 Organize and Analyze Existing Historical Yield and Weather data available in the Dirección de Estadística;
- B.10 Determination of Differential Premiums and Coverages for main crops (subject to the availability of information from B.9);
- B.11 Run the First Survey of Characterization of Farmers in the Area of Melga (July 1980);
- B.12 Run the Second Survey of Evolution of Farmers in the Area of Melga (July 1981);

Ecuador

- B.13 Organize and Analyze Existing Historical Yield and Weather Data, in the Dirección de Estadística;
- B.14 Determination of Differential Premiums and Coverages for Main crops (subject to the availability of information from B.13);

- B.15 Run the First Survey of Characterization of Farmers in the Area chosen for the project, August 1980;
- B.16 Run the Second Survey of Evolution of Farmers in the Area chosen for the project, August 1981.

Mexico

- B.17 Organize and Analyze Cross Section-Time Series Information Available at Chapingo's CEICADAR, to analyze joint effects of Credit Insurance and other components of the Rural Development Strategy;
- B.18 Design Strategy of Surveys in two or three areas where CEICADAR actually supports rural development programs and where insurance is an important component.
- B.19 Run First Characterization Surveys in the two or three areas chosen (October 1980);
- B.20 Run Second Evolution Surveys in the two or three areas chosen.

C. Implementation and Use of Models and Analytical Procedures

- C.1 Implement and Use a Farm Household Model for representative Farm in the Province of Chiriquí, Panama;
- C.2 Implement and Use of a Portfolio Management Model for ISA;
- C.3 Implement and Use of a Farm Household Model for a Representative Farm in the Area of Melga, Cochabamba, Bolivia;
- C.4 Implementation and Use of Farm Household Models for Representative Farms in the Areas of CEICADAR, Mexico;
- C.5 Continuous Analysis .

D. Disemination of Results

- D.1 Continuous Support to Operational Activities;
- D.2 Production of Research Articles and papers for International Conferences;
- D.3 Sponsor a Conference on Risk and Rural Credit Insurance.

5. Expected Output of the Research Program

Credit insurance is being promoted under the assumption that it has significant positive effects for rural development especially the expansion of rural credit. The assumption appears valid on theoretical grounds as well as tentative empirical ones. The ongoing crop insurance and credit insurance programs in developing countries, with as many as 20 years of experience, are producing relatively successful results. There is not as yet enough evidence as to what are the static and dynamic effects of insured credit and what are the socio-economic costs and benefits. Hence, before expanding credit insurance programs around the world, there is need to know on the basis of empirical evidence the benefits of such programs.

It is with this objective in mind that the research program of IICA's rural credit insurance project, carried on as a pilot project, expects to produce the following outputs:

- a. Extensive discussion of the theoretical basis for credit insurance; the factors that limit or condition its effectiveness; the possible effects at the farm level, the banks and the rural sector as a whole.

b. Organization of rural credit insurance programs, that can be administered following the basic principles of actuarial work and portfolio management, but with a capacity to anticipate and respond to political decisions.

c. Demonstration of the costs and benefits of insured rural credit for the promotion of rural wellbeing, particularly for those groups that would have otherwise remained in a status quo position.

d. Comparisons of the effectiveness of credit insurance under varying circumstances found in the several areas of the countries included; for different groups of farmers; in regions with alternative degrees of exposure to natural risk; under the existence or lack of complementary programs as price supports, input subsidies, extension, etc.

These results will be used for two purposes:

- a. To orient the ongoing insurance operations in the countries, improve their effectiveness and;
- b. To create knowledge about rural credit insurance itself, which would avoid mistakes in the establishment and administration of similar programs in other Latin American countries.

A few last comments are worth mentioning:

- The research program in its current structure will not address issues related to reinsurance; this could however be addressed at a later point in time.
- Although a program of activities is presented only for 1980 and 1981; it is expected that the last year of the project; 1982, would follow a similar orientation.
- Greater availability of financial resources may allow expansion of the research program.

ANEXO A

Organización del Archivo de Datos en Base al

Proceso de Aseguramiento

1. La necesidad de Información

Para determinar la eficiencia del programa de seguro agrocrediticio; para calcular primas y coberturas usando métodos actuariales; para determinar los efectos del proceso de adopción de tecnología cuando se dispone de crédito y seguro sobre las inversiones; y para muchos otros objetivos, es necesario disponer de información veraz consistente, oportuna y de fácil manejo.

Habiendo determinado que la información histórica y de corte transversal de la que se dispone es de calidad dudosa y en todo caso incompleta, no se puede depender mucho de ella para el propósito de las investigaciones, ni para fundamentar los cálculos actuariales. Es preciso entonces generar y organizar información para satisfacer los propósitos antes referidos.

La información necesaria a nivel de las unidades productivas puede resumirse en cuatro grandes grupos: a) características de los agricultores y los miembros de su familia; b) características de la finca en cuanto a recursos, inventarios (incluyendo animales), ubicación y acceso, etc.; c) características de las técnicas usadas para la producción, cosecha, comercialización y disponibilidad de cada uno de los cultivos y animales producidos en la finca y d) acceso al crédito, a los medios de asistencia técnica y extensión, las limitaciones de carácter institucional, la participación en grupos asociativos, etc.

Para hacer posibles las investigaciones en una forma comparativa es preciso disponer de esta información para todos los individuos que participan en el programa, es decir los que reciben crédito y están asegurados. Además, a manera de control y referencia, se necesita información sobre grupos representativos (muestras) de agricultores que reciben crédito pero no están asegurados y finalmente para los que no reciben crédito (ni están asegurados). Dado el modus operandi del programa, se descarta la posibilidad de considerar agricultores sin crédito pero con seguro.

Para los individuos o grupos de individuos en el programa, toda la información se debe generar como parte del proceso rutinario de otorgamiento del seguro (con algunas modificaciones que se discutirá mas adelante) pero para los otros grupos de control será necesario realizar una o mas encuestas sobre una muestra representativa.

2. Información sobre los Individuos no incluidos en el Programa de Seguros

El proceso de seguir para la obtención de esta información puede ser dentro de las siguientes líneas:

- a. Identificar el área donde se realizará el proyecto (sería conveniente usar aerofotografías o un mosaico a escala apropiada, quizás 1:10,000).
- b. Localizar en el mosaico, a todos y cada uno de los agricultores que han presentado solicitud de aseguramiento.
- c. Determinar el número total de agricultores en el área del proyecto.
- d. Elaborar una estrategia para la recopilación, organización y procesamiento de la información previa a su análisis estadístico-económico.
- e. Diseñar la muestra de acuerdo al grado de concentración; variabilidad en las características de las unidades productivas; utilización o no del crédito público; etc.
- f. Probar el cuestionario entre un grupo reducido de agricultores y entrenamiento de los encuestadores.
- g. Diseñar el cuestionario en una forma tal que en una sola encuesta se recopile toda la información necesaria, la cual debe ser compatible con la que se obtenga para los agricultores que participan en el programa de aseguramientos.
- h. Realización de la encuesta.
- i. Depuración y Análisis Primario de la información.
- j. Análisis estadístico-económicos varios.

Esta secuencia de actividades se realizará en Bolivia antes de poner en marcha el proceso de aseguramiento en la zona seleccionada.

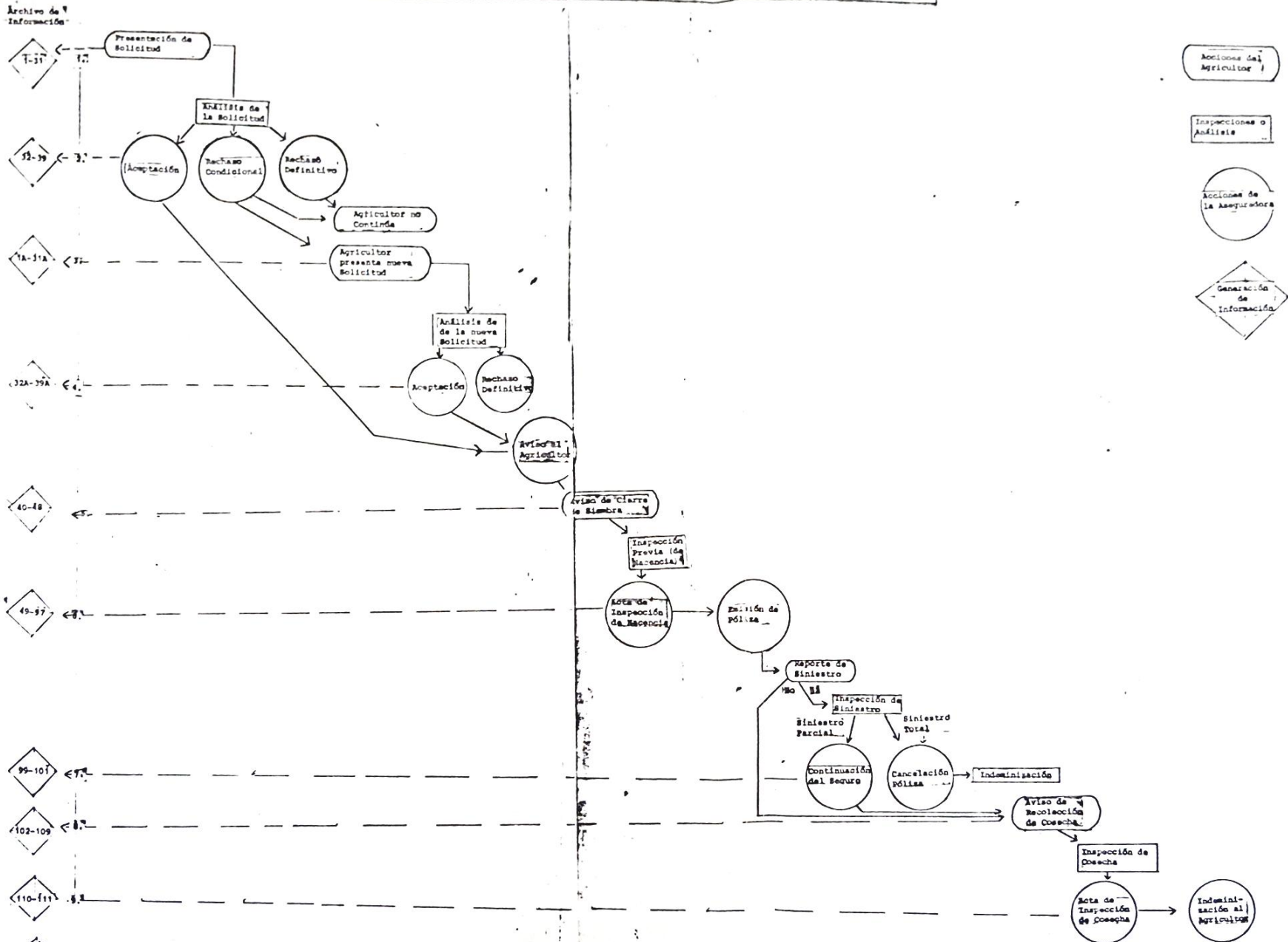
3. Organización de la Información Generada como parte del Programa de Seguros

Como parte del programa de aseguramiento se han establecido las normas y diseñado los cuestionarios en lo que se vierte la información que proporciona el agricultor, como la que produce la aseguradora. Esta información se produce en forma permanente en diferentes etapas que se presentan en la Figura 1. Es necesario codificar esta información de modo que cada dato que aparezca en los formularios y documentos de las operaciones del seguro, quede registrado en un archivo matriz, permitiendo así su uso ya sea para propósitos de la investigación o de control de las operaciones.

En la Figura 1 se presenta un esquema el cual puede ser adaptado a las condiciones especiales en cada país. Lo más deseable sería que el programa de aseguramiento siga el mismo esquema en todos los países para así facilitar el manejo de la información y su utilización en forma comparativa.

El esquema presentado en la Figura 1 ha sido elaborado para el caso particular de Bolivia teniendo a mano las notas elaboradas en la ABA sobre: a) Fechas, Plazos y Formas para Emitir el Seguro. Dar y Contestar avisos de Siniestros e Inspecciones; b) Los formularios a ser usados por la ABA para cumplir toda la secuencia de operaciones como parte del seguro y c) La lista de datos de los registros.

FIGURA 1. SEQUENCIA DE LA SECUENCIA DE ACTIVIDADES DE ASESORAMIENTO Y GENERACION DE INFORMACION



VARIABLE	SECCION	NOMBRE DE LA VARIABLE
1	1	<u>SOLICITUD DE ASEGURAMIENTO</u>
2		Nombre del Agricultor
3		No. de Cédula (o documento de identificación)
4		No. de solicitud
5		Fecha de presentación de la solicitud
6		Sabe leer y escribir (si=1; no=2)
7		No. de miembros de la fam.
8		Edad del agricultor
9		Idioma (español=1; quechua=2 quechua y español=3)
10		'Otro dato'
11		Tamaño de la finca
12		Valor de los activos
13		Localización: Departamento
14		Localización: Provincia
15		Localización: Distrito
16		Localización: Caserío o Cantón ó Comunidad
17		Nombre del cultivo que se desea asegurar
18		Variedad de cultivo
19		Area a ser sembrada
20		Con riego o sin riego
21		Rendimiento esperado (en base a experiencia)
22		Precio esperado a la venta
23		Epoca esperada de siembra
24		Gastos en: maquinaria, preparación y cultivo de tierras.
25		Gastos en: mano de obra p/Labores
26		Gastos en : fertilizantes
27		Gastos en: semillas
28		Gastos en: insecticidas y fungicidas
29		Gastos en: materiales varios
30		Gastos en: mercadeo productos agríc.
31		Monto-del crédito solicitado
32		Institución que proveerá el crédito (código)

2 ANALISIS DE LA SOLICITUD (ASEGURADORA)

33		Fecha de recepción de la solicitud
34		Aceptación (si=1 ; no=2)
35		Fecha de Aviso de Aceptación
36		Rechazo Condicionado (si=1; no=2)
37		Razón del rechazo (varias opciones codificadas)
38		Fecha de Aviso de Rechazo
39		Rechazo Definitivo (si=1; no=2)
40		Razon del rechazo (varias opciones codificadas)

3 PRESENTACION DE SEGUNDA SOLICITUD

(o enmienda a la primera en respuesta a un rechazo condicionado)

[reemplazar entre las variables la 31 aquellas que han sido modificadas y crear la correspondiente 1A a 31A]

ACION A SER GENERADA ENTRE

ASEGURADOS

81		Areas sembrada de quinua
82		Areas sembrada de verduras
83		Areas sembrada de otros
84		Areas aseguradas de maíz
85		Areas aseguradas de trigo
86		Areas aseguradas de cebada
87		Areas aseguradas de quinua
88		Areas aseguradas de verduras
89		Areas aseguradas de otros
90		No. de árboles de durazno
91		No. de árboles de higueras
92		No. de árboles de manzanas
93		No. de vacas
94		No. de terneros
95		No. de toros
96		No. de ovejas
97		No. de llamas
98		No. de gallinas y otras aves
	7	<u>REPORTE DE SINIESTRO</u> (este formulario debe tenerlo el agricultor y presentarlo a mas tardar 5 días despues del siniestro)
1-4		(Repetir variables 1-4)
99		Fecha de ocurrencia del siniestro
100		Tipo de siniestro (parcial o total)
101		Causa de siniestro (según código)
	8	<u>INSPECCION DE SINIESTRO Y EMISION DE ACTA</u> (La inspección debe realizarse a mas tardar 5 días después de recibido el aviso y el acta a mas tardar 10 días después de la inspección)
1-4		
102		Fecha de inicio del siniestro
103		Fecha de terminación del siniestro
104		Area totalmente siniestrada
105		Area parcialmente siniestrada
106		Causa principal del siniestro (según código)
107		Causa agravante del siniestro (según código)
108		Estimación del volumen perdido
109		Si es pérdida total, valor de la indemnización
	7A	<u>REPORTE DE SEGUNDO SINIESTRO</u> (Repetir variables 99-101 como 99A-101A)
	8A	<u>INSPECCION DE SEGUNDO SINIESTRO</u> (Repetir variables 102-108 como 102A-108A)
	9	<u>AVISO DE RECOLECCION DE COSECHA</u> (Lo da el agricultor unos 15 días antes de iniciar la cosecha - usa un formulario que se le otorgó cuando se le extendió la póliza)
1-4		(Repetir variables 1-4)
110		Fecha de inicio de la cosecha
111		Fecha de terminación de la cosecha
	10	<u>INSPECCION DE COSECHA Y ACTA DE INSPECCION DE COSECHA</u> (Repetir variables 1-4)
1-4		
112		Area total cosechada
113		Area siniestrada
114		Producción del área siniestrada

	4	<u>ANALISIS DE LA NUEVA SOLICITUD</u> [reemplazar entre las variables 32 a 39 aquellas que han sido modi- ficadas y crear la correspondiente 32A a 39A]
1-4	5	<u>AVISO DE CIERRE DE SIEMBRA</u> Repetir las variables 1-4
41		Fecha del aviso
42		Fecha que se inició la siembra
43		Fecha que se terminó la siembra
44		Area sembrada
45		Variiedad de la semilla utilizada
46		Cantidad utilizada de semilla
47		Uso de inoculante
48		Uso de fertilizante
49		En el croquis de la unidad productiva indique los varios lotes-márquelos con un número -indique cual es el lote sembrado
	6	<u>INSPECCION PREVIA (DE NACENCIA) Y EMISION DEL ACTA DE INSPECCION PREVIA</u> (repetir las variables 1-4)
1-4		Variedad del cultivo sembrado
50		Area sembrada total
51		Area Asegurada
52		Uso de riego
53		Rendimiento esperado en el area asegurada
54		Fecha esperada de cosecha
55		Gastos en: maquinaria p/preparación y cultivo
56		Gastos en: mano de obra p/labores
57		Gastos en: fertilizantes
58		Gastos en: semillas
59		Gastos en: insecticidas
60		Gastos en: fungicidas
61		Gastos en: materiales varios
62		Gastos en: mercadeo de productos
63		Cantidades a ser usadas de: horas de maquinaria
64		Cantidades a ser usadas de: jornales fami- liares
65		Cantidades a ser usadas de:jornales pagados
66		Cantidades a ser usadas de: semillas
67		Cantidades a ser usadas de: insecticidas
68		Cantidades a ser usadas de: fungicidas
69		(Al momento de la inspección se debe recopilar información sobre todos siguientes aspectos)
70		Presencia de plagas (según código)
71		Presencia de enfermedades (según código)
72		Color (según código)
73		Humedad del suelo (según código)
74		Presencia de malezas (según código)
75		Alturas de las plantas
76		Densidad de siembra
77		Topografía de terreno (según código)
		<u>OTROS CULTIVOS Y GANADO EN LA FINCA</u>
78		Areas sembrada de maíz
79		Areas sembrada de trigo
80		Areas sembrada de cebada

ANNEX B

RURAL CREDIT INSURANCE RESEARCH TEAM

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* financed by the sub-grant and not by the research program.

ANNEX C

RURAL CREDIT INSURANCE

CURRENT BUDGET FOR 1980 AND 1981

	<u>1980</u>	<u>1981</u>
<u>Personnel</u>		
Research Coordinator	33,959	38,000
Research Specialist	--	32,674
Research Associates *	21,000	23,000
Consultants	19,600	21,400
<u>Operation Costs **</u>		
San José	21,800	23,800
Ecuador	1,600	14,300
Bolivia	6,300	17,800
Panama	13,100	14,300
Mexico	16,300	17,800
<u>T O T A L</u>	133,659	203,074

* contributed by the sub-grant to the countries.

** Includes travel and per diem; computer time, occasional field personnel and general services. Secretarial services are provided by the umbrella project.