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COLOMBIA



**EVALUATION AND
RECOMMENDATIONS**

October — November 1963



**DEPARTMENT OF STATE
AGENCY FOR INTERNATIONAL DEVELOPMENT
BUREAU FOR LATIN AMERICA**

Rural Development Series No. 4

WORKING REPORT FOR STAFF USE

REPORT OF SURVEY TEAM

from

U. S. DEPARTMENT OF AGRICULTURE

and

U. S. DEPARTMENT OF INTERIOR

and

ASSOCIATION OF STATE UNIVERSITIES

AND LAND GRANT COLLEGES

on

RURAL DEVELOPMENT PROGRAM

IN COLOMBIA

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REPORT OF SURVEY TEAM FROM THE U.S. DEPARTMENT OF AGRICULTURE,
U.S. DEPARTMENT OF INTERIOR AND LAND GRANT UNIVERSISTY

During the period October 28th to November 24th, 1963 a team of U.S. Consultants visited Colombia for the purpose of reviewing the program of the Rural Development Division of the US AID Mission to Colombia and the overall need for technical assistance in the rural sector of the Colombian economy. Also for the purpose of determining the extent to which such technical assistance could appropriately be furnished by the U.S. Departments of Agriculture and Interior and Land Grant Colleges or Universities, and to develop participating agency agreements and advise as to what part of the US AID program can be most appropriately implemented by contract or contracts with other Federal or non-Federal agencies.

The team was composed of three representatives from the U.S. Department of Agriculture, Paul A. Nicholson, Agricultural Marketing Service; Robert E. McDowell, Agricultural Research Service and William A. Weld, Soil Conservation Service. Two representatives from the U.S. Department of Interior, Charles C. Butler and Odin S. Hanson, of the Bureau of Reclamation. One representative from the Association of Land Grant Colleges and Universities, Raymond J. Penn, Agricultural Economist, University of Wisconsin and John B. Slack, US AID Consultant Agricultural Credit and Team Coordinator.

Contacts and Travel

Most of the first week was spent in Bogota where the team received briefings by U.S. Embassy and AID officials and held conferences with the Director of the Agrarian Reform Program, the Minister of Agriculture, the Institute of Technical Investigations, representatives of the Rockefeller, Ford and Kellogg Foundations, and representatives of the National Planning Board.

The Director of the Rural Development Division of AID and members of his staff presented their proposed program plan and goals for the Division. Each staff member presented plans and goals for his particular activity and the written plans and goals were discussed in detail. The program plan of the Division contains the following fields of activity:

1. Agricultural Diversification
2. Livestock Development
3. Basic Resources
4. Agrarian Reform
5. National Agricultural Planning
6. Advanced Agricultural Training
7. Rural Credit and Cooperatives

The team reviewed and considered all of these activities as well as others which appeared to have possibilities. In the written comments that follow, some of the above activities have been combined.

Following the above briefings and consultations members of the team separated into groups of one or more and together with U.S. and Colombian technicians and officials visited universities and other educational institutions, research stations and laboratories, agricultural markets, slaughter houses, livestock markets, dairy, beef cattle and other types of farms, drainage and irrigation projects and watersheds in many parts of Colombia. The entire team visited the Cauca Valley and studied many phases of agriculture in the valley together with some of the valley development being carried on under the sponsorship of the Cauca Valley Corporation (CVC).

The CVC has progressed much further with development in the Cauca Valley than is the case in any other part of the country. Dr. Bernardo Garces and members of his staff were most generous in giving of their time and facilities in arranging for members of the team to see and study all phases of agriculture and general development in the valley that was possible in the time available.

Members of the staffs of all Governmental and semi-Governmental agencies contacted, as well as private business firms and individuals, have given generously of their time and facilities to enable members of the team to see and study all phases of agriculture and related operations and institutions. Other sections of this report give in more detail the contacts made, enterprises studied and the areas of the Country visited by various members of the team.

Our special thanks go to the Director of the Rural Development Division, Charles B. Seckinger and members of his staff and to the Acting Agricultural Attache, Richard Smith, all of whom have made their services available, literally, both day and night to assist this team making contacts, arranging time and travel and generally assisting the team in carrying out its assignment.

The last week of the stay in Colombia was spent by the team in outlining its report and conclusions and recommendations and reviewing them with the Ambassador, AID officials, the Minister of Agriculture, representatives of the National Planning Board and the Director of the Agrarian Reform program.

During the last week also a joint conference was held between the team and a team of Land Grant College representatives headed by Dr. Paul Miller President of West Virginia University who were in Colombia to advise the Colombian Institute of Agriculture (ICA) regarding its program of Education Research and Extension.

SUMMARY AND CONCLUSIONS

1. Agricultural Diversification and Marketing.

a. It is proposed that a marketing technician be furnished by USDA for a period of one year to work with groups such as Instituto Nacional de Acastecimento (INA), Instituto de Investigaciones Tecnologicas (IIT), chain stores, cooperatives and processors on storage, ripening and handling methods needed to improve marketing efficiency and reduce waste. This technician should also advise the AID group on marketing problems especially those in connection with fostering the production of a new product or encouraging the production of an old product in a new area. The tour of duty should be extended to two years if the technician finds that sufficient Colombian groups are interested in the project to make it worthwhile. One or more short term consultants on specialized subject such as packaging or market demand for a commodity should be furnished for approximately 3 months each upon request of the marketing technician.

b. Consideration should be given to furnishing a fruit and vegetable specialist to promulgate grades and advise on establishing an inspection service when and if the marketing technicians referred to in a. advises that sufficient progress has been made in quality improvement to make this activity worthwhile.

c. After the laboratory equipment now on order for IIT has been secured, it is proposed that consideration be given on a specific project basis to furnishing one or more processing and utilization specialist for periods up to one year each to work with IIT.

d. Regularity decrees for plant quarantine, seed and fertilizer have been issued by or are in process of being issued by the Minister of Agriculture. We think these should be given a trial before an US AID project is undertaken in this field.

e. We believe that the present or an expanded US AID staff can accomplish more in the crop diversification activity by working more closely with existing organizations such as the Coffee Federation or other action or research groups working in their field.

f. It is proposed that, after a decision is reached by GCC to enter into a meat export program (a) a marketing technician be furnished for a period of about one year to help in making surveys of cattle production available for the export market, to advise in techniques of forecasting and developing supplies and to advise on market prices especially in world markets (b) a meat cutting technician be furnished by USDA for a period of about three months to train Colombians in cutting meat for the export market and (c) a meat grading specialist be furnished by USDA for a period of about three months to train Colombians in the grading of meat for the export market.

g. It is proposed that the supervised credit team recommended in this report also work with the Banco Ganadero and INEUGAN to train bank loan personnel (livestock) and advise on loan policies designed to assure proper planning for a uniform supply of cattle.

h. The proposed activities in rubber development, plant exploration and utilization, nematodes and tropical horticulture are not sufficiently definitive at present to warrant participation by ARS.

Livestock:

2. Development. The slow rate of expansion of the cattle, swine and poultry populations indicate the livestock industry of Colombia is "stagnant". It is encouraging, however, in spite of poor efficiency in marketing and numerous problems in production individuals and organizations are willing to work toward rapidly advancing the contribution of the livestock industry to the economy of Colombia. AID can and should give high priority to promoting an efficient livestock industry through assistance to education, research, production and marketing credit and disease control.

a. It is proposed that US AID focus a major portion of its support in the immediate future to promotion of an export market and efficiency in domestic marketing through production and marketing loans and technical assistance. This program should be coordinated through the Ministry of Agriculture but direct action should be through the Banco Ganadero, INDUGAN and Federacion de Ganaderos.

b. After a decision is reached by GOC to enter into an export program USDA should, in so far as possible, cooperate in providing technical assistance to evolve techniques for market forecasting, developing a uniform flow of livestock to markets and market pricing as well as providing personnel for training in meat cutting techniques, meat grading and farm management. The farm management technical assistance would be through a technician for six months to train Banco Ganadero personnel in supervised loan procedures. (Specific recommendations on marketing personnel are given under the Agricultural Diversification and Marketing summary.)

c. To make the program in livestock development most effective AID should recognize the need for a flexible system of types of technical assistance in terms of specific skills to best fit the relationship of the livestock industry to the Colombian economy.

d. AID should render support in every way possible to promote research, teaching and extension in the Animal Husbandry and Veterinary fields. (Specific recommendations are found in the Land Grant College Summary). Participation by Colombian livestock organizations in these fields through scholarship and research grants should also be continually encouraged.

e. Although there are no immediate plans for the use of USDA production research personnel, AID's program should be flexible enough to permit bringing in short term specialists on animal nutrition, reproductive physiology, animal breeding, disease control or other special problem areas where such talents can be utilized to an advantage in regional or national problems.

f. Since animal diseases and parasites are a great problem in the efficiency of production in the country, it is recommended that (1) AID strengthen its direct hire staff in this field with a veterinarian; (2) cooperate with the Ministry of Agriculture in planning their disease regulatory

programs; (3) support disease research and veterinary training through ICA, and (4) when plans for work in specific problem areas are developed then AID give consideration to assistance through contracts with USDA.

3&4. Basic Resources and Agrarian Reform - To assist the Colombian Government in the reconnaissance of areas not yet studied, in preparation of feasibility investigations on projects identified, in the solution of technical problems on projects already completed or currently in the design and construction phase and in other phases of land and water resource development, it is recommended that AID include in its program for the next four to five years the following:

a. Under Participating Agency Service Agreement obtain from the United States Department of the Interior, Bureau of Reclamation, a basic Land and Water Development Planning Team consisting of four to five technicians assigned for the full term of the program with additional specialists called in as needed for short details. A typical team of this type would include a planning engineer, an agricultural economist, an irrigation engineer and a soil scientist plus other specialists as needed.

b. Under Participating Agency Service Agreement obtain the services of a two or three men team for three months to assist with the establishment of standards and procedures for rapid titling of agricultural lands. Personnel for this assignment may be obtained from one or several U.S. Government Agencies.

The two recommended teams would work with INCORA and other Colombian agencies involved.

c. Watershed Studies - From preliminary reconnaissance of the watershed areas, the Ubaté area and Rio Anchicaya appear to afford the best opportunity for undertaking watershed evaluation studies.

A team of two SCS technicians could form the nucleus of a planning party to undertake the proposed studies over a two year period. One technician should have broad experience in all phases of watershed planning and possess specific training in Economics. The other technician should have background in watershed geology with particular emphasis on sedimentation.

Backstopping assistance would include the services of a U.S. Forest Service technician in the field of Forest Influences for three months, and a civil engineer (drainage specialist from SCS) for a four to six month detail. Other specialists might be required for short-term details.

In the event the GOC agencies place high priority on conducting overall basin type development studies a planning team of four SCS technicians could be utilized effectively over a three year period. The team would include a planning party leader (engineer), economist, hydrologist and geologist (watersheds) and would replace the two-man team proposed for watershed evaluation studies. Backstopping assistance would be required to support the planning party in such specialized fields as engineering geology, drainage, and design.

The assignment of a Soil Conservationist to provide technical assistance to landowners in developing and carrying out conservation farm plans may also be considered.

5. National Agricultural Planning - This is a most important activity and the team strongly supports the three high level economists requested by US AID for this purpose.

There is a need for the intergration and coordination of basic agricultural data. There seems to be a real merit in giving someone in the Ministry of Agriculture responsibility to get the people from the several data gathering agencies together regularly.

One of the functions of the Planning activity might be establishment of an agricultural research advisory council.

The Planning activity insofar as possible should be performed by Colombian technicians. AID should explore the possibility of employing such technicians.

6. Advanced Agricultural Training - The US AID Mission is requesting for FY65 funds sufficient to employ five senior professors in support of the Instituto Colombiano de Agriculture (ICA). The team concurs with the need for many more agricultural technicians trained at the graduate (research) level which is the basic purpose of ICA.

The team makes the following general comments that may be useful in establishing ICA.

(a) ICA's animal husbandry staff should be encouraged to assist in undergraduate teaching.

(b) Integration of training and research has been a basic concept of the Rockefeller Foundation research in Latin America and should be maintained.

(c) AID's method of selecting "Participants" for training should be flexible enough to accommodate the selection process that has been followed by the Rockefeller research program.

(d) AID should have a policy of supporting research by both US and Colombian personnel.

(e) The idea of emphasizing the development of food crops which would improve the structure and standard of living of the people is a good one and should be retained.

(f) Considerable additional staff in social sciences will be necessary. In the beginning at least, ICA should probably limit its expansion into all social sciences, particular emphasis should probably be on farm management, marketing and price policy. It is important, however, to make arrangements so that the social science research and teaching of other Universities can be utilized. AID, the Ministry and Foundations should make sure that some funds be made available to support and expand social science outside of ICA.

- (g) The ICA should play a major role in extension through:
- (1) Training competent agricultural technicians;
 - (2) research on communications and other extension methods, and
 - (3) putting the research results into usable form for all that will use them.

(h) Home economics training is also important in a well rounded agricultural training program particularly for those in the supervised credit field.

(i) A library of reports and research analysis should be developed and kept in usable form.

7. Rural Credit and Cooperatives.

a. Supervised Agricultural Credit - The Supervised Credit Division of INCORA needs technical assistance in four areas of operation: 1) Administration, 2) in-service training, 3) establishing proper fiscal and accounting procedures, and 4) establishing an internal audit system.

It is recommended that the following technical assistance be furnished through the Farmers Home Administration of the U.S. Department of Agriculture.

(a) In administration, one technician for a period of two years to advise and assist the Director of Supervised Credit to develop a sound administrative organization at all levels of operations. Short term assistance of one man in this field for about 60 days each year will be sufficient for the third and fourth years.

(b) For in-service training two technicians for a period of two years each to do in-service training work with supervisors and zone and area supervisors. Short term assistance by two men in this field for about 90 days each year will be sufficient for the third and fourth years. These technicians will also give such assistance as is warranted to SENA in conducting the basic training program.

(c) A technician for approximately three months to assist INCORA and the banks handling supervised credit accounts in establishing proper fiscal controls and accounting procedures.

(d) A technician for approximately three months to assist the director of the division in setting up an internal audit program and to train a small nucleus of examiners.

Dr. Penalosa, Director of INCORA, accepted the recommendations on Supervised Credit in full except for the very specific requirement that all technicians be able to speak Spanish. It is felt that this is a reasonable request since he will be able to get much more valuable service from these technicians if they are able to speak the language.

(b) Cooperatives - The assistance now being given to the National Association of Cooperatives should be continued until this agency is established on a basis that it can render adequate assistance in organization and training to its member cooperatives and new cooperatives being organized.

Efforts are now being made to organize a Bank for Cooperatives in Colombia. If and when this Bank is organized we recommend that it be given assistance in obtaining any external financing that probably will be necessary and that technical assistance in organization and administration be given for a period of at least two years or until it is firmly established. This assistance can best be given by the Farm Credit Administration through its Bank for Cooperatives.

Assistance to the wholesale cooperative now being established should be given to this group through the marketing technician being recommended in another section of this report.

We feel that agricultural cooperatives can perform a real service in developing the agricultural sector of the economy and that such cooperatives should be established wherever and whenever there is a definite need for them.

GENERAL TEAM COMMENTS

1. The U.S. should have as its primary objective the education and training as soon as possible of sufficient numbers of Colombians to carry on without the assistance of U.S. technicians.

2. Projects must be solidly supported by Colombians to be successful.

3. Duplication of effort should be avoided by obtaining full information on work being carried out by different agencies and groups.

4. Technicians assigned to projects should be familiar with the Spanish language whenever possible.

5. Every effort should be made to interest private capital in proposed projects.

6. We believe that the present US AID staff of the Rural Development Division is very competent and should be retained on a direct hire basis. This staff should be supplemented by the participating agency direct hire and contract personnel proposed in this report.

SUMMARY OF ESTIMATED MANPOWER NEEDS FOR A TWO YEAR PERIOD

	<u>Source</u>	<u>No</u>	<u>Long Term</u>	<u>Short Term</u>	<u>Total Man Years</u>
1. Agricultural Diversification					
a. Marketing Technician	USDA	1	1-2 yrs		2
b. Fruit Processing Technician <u>a/</u>	"	1	1 yr		1
c. Food Dehydration Technician <u>a/</u>	"	1	1 yr		1
d. Meat Processing Technician <u>a/</u>	"	1	1 yr		1
2. Livestock Development					
Livestock Export <u>b/</u>					
a. Marketing Technician	USDA	1	1 yr		1
b. Meat Cutting Technician	"	1		3 mo	$\frac{1}{4}$
c. Meat Grading Technician	"	1		3 mo	$\frac{1}{4}$
d. Farm Management Specialist	"	1		6 mo	$\frac{1}{2}$
Disease Control					
Veterinarian	Contract	1	2 yrs		2
3&4. Basic Resources and Agrarian Reform					
Basic Land and Water					
a. Planning Engineer	USDI	1	2 yrs		2
b. Agricultural Economist	"	1	2 yrs		2
c. Irrigation Engineer	"	1	2 yrs		2
d. Soil Scientist	"	1	2 yrs		2
Rapid Titling					
a. Team of three men	USDI/other	3		3 mo	3/4
Watershed Studies					
a. Agricultural Economist	USDA/SCS	1	2 yrs		2
b. Geologist (Watersheds)	USDA/SCS	1	2 yrs		2
c. Forest Influences Technician	USDA/FS	1		3 mo	$\frac{1}{4}$
d. Drainage Specialist	USDA/SCS	1		6 mo	$\frac{1}{2}$
Basin approach to land and water resources planning <u>c/</u>					
a. Party Leader (Engineer)	USDA/SCS	1	2 yrs		2
b. Hydrologist	USDA/SCS	1	2 yrs		2
Plus short term assistance as needed in such fields as engineering geology design, and construction					
5. National Agricultural Planning					
a. Econcmist	LGC or USDA	3	2 yrs		6
b. Participant Training - 6 persons					
6. Advanced Agricultural Training					
a. Professors	LGC	5	2 yrs		10
b. Participant training - 10 persons					
7. Rural Credit and Cooperatives					
Supervised Credit 1st and 2nd years					
a. Administration Specialist	USDA/FHA	1	2 yrs		2

	<u>Source</u>	<u>No</u>	<u>Long Term</u>	<u>Short Term</u>	<u>Total Man Years</u>
b. In-service Training Specialists	USDA/FHA	2	2 yrs		4
c. Fiscal and Accounting Services Specialist	USDA/FHA			3 mo	$\frac{1}{4}$
d. Internal Audit Specialist Cooperatives	USLA/FHA	1		3 mo	$\frac{1}{4}$
a. Cooperative Bank Specialist <u>d/</u>					

- a/ Contingent on acquisition and installation of laboratory equipment and submission of project.
- b/ Contingent on development of livestock export program and the approval of a livestock loan.
- c/ In event basin approach to land and water resources planning decided upon.
- d/ Contingent on establishment of a bank for cooperatives.

BACKGROUND INFORMATION

Colombia has a population of approximately fifteen million (15,000,000) people concentrated generally in the Western half of the country. About half the population is dependent on agriculture for a livelihood. The best information available indicates that the population is increasing at the rate of about three (3) percent per year while agricultural production is increasing at only a little more than one half that rate.

Forty (40) percent of the national income is from agriculture and agriculture accounts for more than eighty (80) percent of the foreign exchange. Coffee accounts for ninety (90) percent of the agricultural exports and seventy five (75) percent of the total exports from the country.

Colombia has a trade deficit of from fifty to one hundred million dollars each year. Agricultural commodity imports amount to roughly 40 million dollars annually, made up chiefly of wheat, barley, tallow and edible oils.

The Western half of Colombia is mountainous with three principle mountain ranges running generally north and south. However, along the northern (Atlantic) coast and the west (Pacific) coast and in valley areas between mountain ranges there are large areas suitable for agriculture. Many of these areas have very good soils and with proper drainage and in some areas irrigation they are suitable for intensive agriculture.

Much of the agriculture of the country is carried on in the mountain areas and on land that is too steep for proper cultivation. This causes a serious erosion problem and the heavy silting of streams. This silting process is causing serious drainage problems in many of the valley areas and unless controlled will seriously impair the productive value of some of the best producing soils of the country.

Due to the wide range in elevation in the western half of the country many of the crops grown in the U.S. can be grown successfully in Colombia plus many tropical crops which can not be grown in the U.S. This gives Colombia a very wide range of crops that can be grown satisfactorily. Also, the long growing season makes it possible to grow two crops each year for many of the crops produced.

DETAILS OF THE SURVEY INTO VARIOUS FIELDS OF ACTIVITY

1. Agricultural Diversification and Marketing - The team considers work in this field essential to the agricultural economy of Colombia but a field that requires careful planning to be effective in carrying through by government agencies or private investors; otherwise a lot of effort will be lost.

The team experienced difficulty in evaluating these activities because of insufficient information in many instances on (a) specific project objectives (b) the amount of support available (c) what work has been done to date (d) what work is now planned by agencies other than US AID and (e) what Colombian groups and organizations are ready to work with the technician in carrying out the project.

Much work is being done in this field by other agencies such as the Rockefeller Foundation in cooperation with ICA, the Federations such as coffee and rice, private processors and many others. It is very important that any work undertaken by US AID not duplicate work already done. It was, of course, impossible for the team to become fully informed on all of the work being carried out during the limited time it spent in Colombia.

The Statement of Goals prepared by the Rural Development Division requested assistance in the form of consultants and technicians for 10 activities (discussed under eight headings below).

a. Rubber Development - To supply technical assistance in the early phases of a rubber production plan for making Colombia self-sufficient in rubber development. The initial request is to have one consultant work with the Instituto de Investigaciones Tecnológicas (I.I.T.) for a two week period of planning a program of development. It is proposed this be followed by intermittent visits of a technician to work with Planceacion in introducing stocks and development of a nursery. The two-week planning technician is already scheduled therefore it is recommended that requests for USDA technical assistance be requested only after GOC has taken steps to inaugurate a working base that can make effective use of specialists.

b. Plant Exploration and Utilization - To develop and promote natural plant sources capable of being utilized. Guidance, stimulation and suggestions would be the first approach to bringing about the objective. It is recommended that this be conducted by the AID staff until such time as a satisfactory base of Colombian activity is established to insure seriousness of intent to the point that outside technical assistance can be utilized effectively.

c. Nematode Survey - To demonstrate the presence and deleterious effects of nematodes not only to producers but also to administrative and political level personnel in GOC. One Technician for 6 months is requested to work with ICA.

The team is advised by persons with experience in Colombia that nematodes are an universal problem in plant production and there is no practical means for eradication except treatment of restricted areas such as plant beds. Nematodes are not now a serious problem in corn, wheat, potato or barley production, therefore, if work should be undertaken the team recommends that it be in conjunction with production of crops where serious problems exist. Since the present proposal does not offer a good base to tie to, it is recommended that technical assistance not be considered at this time by USDA.

d. Fruit Processing, Food Dehydration & Meat Processing -

Technical assistance to the Instituto de Investigaciones Tecnológicas (IIT) for research on food processing, storing and utilization. This program was initiated with \$139,000 grant in FY-1963 for equipment to be purchased by USDA. It is proposed to follow this up with three technicians for one year each to work with IIT.

The team visited IIT and was impressed with the personnel and the caliber of work. At present their work is limited because of inadequate laboratory space but a new plant is underway. IIT is a non-profit organization sponsored by National Banks, the Coffee Federation, oil companies and various other organizations for the purpose of aiding the country in utilization of its natural resources, particularly agricultural products.

IIT serves as a good base for both grant and technical assistance by AID. The team believes that IIT affords one of the best opportunities for ARS technical assistance in Colombia.

The Utilization Research Group of USDA has worked with AID and IIT in equipment procurement therefore USDA already has an interest in the work of IIT. It is recommended that US AID solicit technical assistance from the Utilization Research Group in USDA to the extent requested in the fields of food processing and utilization. This should be done on a specific project basis and basic planning should be initiated as soon as possible, but it appears advisable to delay arrival on any technician until the new laboratory facilities of IIT are completed.

e. Tropical Horticulture - The proposals under this subject are very general and present planning does not provide for a base from which technicians can operate. There is at present a 4 year U.N. Special Fund Project on Rural Development underway with CVC. A section of this project deals with tropical horticulture being conducted at the ICA Experimental Station, Palmira. There is a U.N. project leader horticulturist from Brazil working in conjunction with Colombian technicians on projects of adaptability of papaya, grapefruit, bananas, pineapple and passion fruits. Since the Palmira project follows the objective of the AID proposal and is a going concern, it is recommended that AID keep abreast of development and possible help in field trials rather than run the risk of duplication.

f. Regularory Laws for Plant Quarantine, Seed and Fertilizers -

We think US AID proposals have merit. However, we are informed that the Ministry of Agriculture is working in each of these fields and that decrees or regulations have either been issued or drafted for issuance. We believe these should be given a try as they may prove adequate under the present

circumstances. Some specific comments follow on each of these subjects.

- (1) Plant Quarantine - The Ministry has an expert that has worked in this field for many years.
- (2) Seed Law - The Ministry has a proposed draft in this field which is expected to be issued soon. The importation of seed is now closely controlled and can be done only after licensing by the Ministry.
- (3) Fertilizer Law - The Ministry has issued a decree in this field. Fertilizers are sampled and tested. The IIT, where testing is done, advised the team that only a very small percentage of samples now failed to meet specifications. This is a big improvement in the past few years. Originally as high as 30 percent failed to measure up to specification according to IIT officials. The Coffee Federation purchases large quantities of fertilizers and stated that they are having no difficulty in securing fertilizers meeting their specifications.

g. Grading Standards for Tropical Fruits - This project as proposed by US AID included (a) a 7 months survey by one specialist to determine the magnitude of the problem and (b) followed by an 8 months tour of duty by standardizing action specialist to help prepare standards. We believe that improvement in marketing efficiency is necessary, as discussed more fully under the subject Marketing, before grades are of much practical value.

We agree, however, that the field of marketing has been seriously neglected in Colombia. (As one Colombian remarked to a team member, marketing is "woman's work"). We propose that an USDA marketing technician be furnished to work in the field of improving marketing efficiency for a 1-2 year period with possible short term help as outlined in the summary and conclusions. After marketing improvement has been made consideration should be given to promulgating fruit and vegetable grades.

h. Agricultural Marketing Promotion - This USAID project is proposed to be accomplished through contract hire. It is intended to foster the marketing of "many products existing in Colombia which are exotic in temperate zone areas of the world and can easily be marketed if buyers and sellers make contact". This is, of course, a worthwhile objective and we support it. However, caution should be exercised in carrying it out to avoid marketing schemes which have been tried before and failed. Good judgment, plus full utilization of all available information, will be needed in operating such a project to make sure the specifics proposed by the contractor have merit.

i. Marketing Observations - Marketing is discussed below under several sub-headings. Although marketing is generally considered to be the movement from the farm gate to the consumer, production and the cultural practices followed in Colombia play a large part in the quality of the items available. In many instances, especially in fruits and vegetables, quality is lacking. Propagating budded and grafted varieties of fruit would help in this field. There is a real need to improve production practices concurrently with market improvement.

It is very difficult to become expert on marketing in a country like Colombia in such a limited period of time. Comments made result mostly from observations in the Bogota, Medellin and Cali markets, plus discussions with many individuals and organizations. Some of the most important are the following:

- (1) Rockefeller Foundation
- (2) Instituto Nacional de Abastecimiento (INA)
- (3) Coffee Federation
- (4) Rice Federation
- (5) Several Bogota grain and coffee brokers
- (6) Minister of Agriculture and staff members
- (7) National Planning Commission
- (8) Fruco, Cali
- (9) INCORA
- (10) Carulla's Bogota
- (11) Cooperativa de Caficultores, Manizales
- (12) Numerous wholesalers and retailers in the three markets listed above
- (13) Agricultural Attache
- (14) Instituto Latino americano de Marcades Agribola (IIMA)
- (15) Instituto de Investigaciones Tecnologicas (IIT)

Damage in marketing is widespread. Yet the demand for food is such that much of the damaged items are consumed. Price ceilings exist for many food items. Probably as a result, premiums for better quality are non-existent or are small.

(1) Transportation - The lack of an adequate transportation system is one of Colombia's big problems. Perishable produce observed generally showed the effects of bouncing over rough roads and rough handling.

(2) Packaging - Often packages were inadequate to protect tender items. For example, avocados and bananas generally are shipped to markets in sacks.

(3) Grading -

(a) Fruits and Vegetable Generally are not Graded - Exceptions include some grading by wholesalers and warehouse grading by Carulla's a progressive retail chain in Bogota with six "super market" outlets. Here grading was merely removing badly damaged, decayed and badly scarred specimens. Potatoes are generally divided into three sizes by eye.

Observations in important markets indicate that there must be more improvement in production, packing, packaging and handling practices before it is practical to draft grades for fruits and vegetables. The use of even minimum grades at this time would eliminate a large volume of these items which are now consumed. There is much lack of uniformity and standardization of the items now sold.

(b) Rice, Dry Beans and Granulated Sugar - These items generally are adequately graded. INA buys four grades of rice and three of beans. Granulated sugar is standardized by the sugar mills.

(c) Corn and Wheat - INA buys these by minimum grades based mostly on moisture content and foreign material present.

(d) Livestock and Meats - Cattle are divided into four grades at the important Medellin livestock market. Prices paid, however, varied only narrowly (by about 4 cents per lb.) from the poorest grade, equivalent to the U.S. canner grade, to the best grade, equivalent to USDA Commercial or Low Good.

Under the present price ceilings present cutting methods appear adequate for the domestic market. However, meat cutters must be trained in new cutting methods if meat is to be exported.

(e) Eggs - Some eggs are candled and graded by weight and this is a growing practice.

(4) Wholesale Markets - Many complaints were heard concerning wholesale market inefficiency. Principal fruit and vegetable markets observed at Bogota, Medellin and Cali were crowded and served by inadequate transportation facilities. Also, practically all handling is by hand rather than by belts, carts and fork trucks. However, city fees are low for space or stall use and labor costs appear to be reasonable.

Some new markets have been built in Cali in an attempt to improve efficiency. The one visited was of improved design and sanitation located on the outskirts of the city. However, stall fees were higher and many stalls were not rented. Many complaints were heard in this market that farmers did not bring produce there to sell and that only a few retailers came to buy.

The Medellin livestock market is well designed and one of the best we have seen.

(5) Middlemen and Margins - Many complaints were heard that there are too many middlemen and that margins are excessive. There appears to be some truth to this statement. Several organizations are working to reduce these. Among such organizations are INA with 60 retail outlets and more planned, producer cooperatives and consumer cooperatives.

(6) Market News - A market news service exists for livestock. For example, quotations by grade are issued in bulletin form and publicized by radio and newspaper once a week for the important Medellin livestock market. Receipts are also given. The report is mailed free to these requesting it.

(7) Processing - There are several small plants processing fruits, vegetables and meats in Colombia. One of the largest, Fruco (largely owned by Corn Products) was visited. This organization has a sizeable research operation and is working hard to develop products which are profitable or "which promise an eventual profit." They have found it necessary to produce

their own raw material as a rule since they were unable to purchase commodities of suitable quality on the open or even contract market. Generally the cost of raw materials are considerably above those in the U.S. although they are working on and expect to be able to reduce such costs. Tomatoes offer the most hope in this line. Other items canned include green beans, peas, soups and passion fruit juices. Papayas have not yet been canned successfully by them. They are working on pineapple but have many problems. Can prices are very high and all canned items are high at retail.

The IIT laboratory is also conducting fairly extensive research in processing and this work was reviewed.

Although processing work, especially by private companies, should be pursued with vigor, it is probable that the processing industry will not attain the prominence it has in the U.S. since Colombia has many items of fresh produce available the year around.

(8) Slaughtering - Many cities operate slaughtering houses on a custom basis. Several of these were visited and they generally appeared adequate for present domestic use. However, if export meat quotas are established, some training will be needed in carcass inspection, in meat cutting, and in grading.

(9) Price Ceilings - There are retail price ceilings on many important agricultural commodities. Although prices for practically all important Colombian agricultural commodities, except meats and currently sugar, are now above world prices, it is probable that price ceilings operate to reduce agricultural production since the profits that can be made in other industries generally are not regulated.

(10) Price Supports - INA purchases corn, wheat, dry beans, rice and sometimes potatoes during the "flush" season and sells them back into channels of trade in the "lean" season. They have about 3,000 "buying stores" and 20 "laboratories" to check compliance with buying specifications. They claim that they handle up to 50 percent of these crops.

(11) Storage - Storage space is generally short (except for coffee). Very little cooler space exists. Potato storages are lacking although IIT is working on this. (Potato blight is a problem). Several organizations, including INA and the Rice Federation, urged that work be done on storage problem. We agree it should be. It should be pointed out, however, that less storage space will be needed in Colombia than in temperate zone climates, since two crops per year are usually grown in Colombia.

(12) Retail Markets - A multitude of small retail markets exists in Colombia cities. These handle comparatively few items and cater to nearby consumers. Many are accused of taking big margins. Some chain stores are being developed especially in Bogota. INA has several retail outlets and claim they sell at 15 to 25 percent less margin than do their competitors. Several co-operatives also claim they sell for less. These efforts should, of course, be encouraged. Some competition should help to reduce somewhat the present high cost of food.

(13) Import and Export Controls - Import and exports are closely controlled. Colombia is looking to exports of agricultural products to help solve its serious balance of payments problems. If this is to be done, plans must be made and targets established towards which agriculture can work. Where plans and targets involve commodities not now exported, such as meat, technicians may be necessary to train Colombians in packing, cutting and handling methods.

j. General Recommendations.

(1) That AID add more depth to its direct hire staff to better determine what kind and the extent of activities in agricultural diversification already underway in Colombia.

(2) That AID work more toward tying programs in this field with research activities underway in the country, both by government agencies and private companies. The Coffee Federation, for example has extensive field and research organizations, and it is already doing considerable work in crop diversification. Over 200,000 farm families can be reached through this one organization.

(3) That AID consider doing more work in drawing up plans and encouraging the production of cheap sources of carbohydrates that are essential to development of the livestock industry, particularly swine and poultry.

2. Livestock Development - There is a great need for credit and technical assistance in all phases of the Colombian livestock industry to help meet the nutritional needs of the population and promote exports that will contribute toward the balance of payments and a stimulus to efficient production methods.

During the period FY 1964-68 US AID proposes to place emphasis on projects to increase livestock production and efficiency through development loans. This sector of the team report will be devoted to evaluation of the projects followed by recommendations on ways the Agricultural Research Service and the Agricultural Marketing Service of USDA and/or Land Grant Colleges might render assistance.

a. Production and Market Credit - Although the US AID proposal separates the loans for Directed Production Credit and Development of Market Potential, it appears that the best approach is to tie the two closely together, hence the discussion and recommendations consider these two projects as a single entity. The team livestock participant and the marketing specialist recommend these loans be given high priority, provided they are directed toward promoting an export market of beef for the reasons: (1) that the country needs the returns from the export of livestock products, (2) that unless exports are stimulated the additional credit at low interest rates will cause an exchange of cattle among producers resulting in inflatory domestic prices; and (3) unless the market is broadened the livestock industry will grow slowly in relation to the human population with a resulting lower per capita availability of livestock products.

The US AID proposals on credit are as follows:

(1) The Directed Production Credit is a development loan program that is designed to increase the capacity of the Livestock Bank for extending credit to livestock producers. An institution which is already established will be strengthened and enabled to grow at a faster rate and provide more complete services. A loan totaling US \$4 million is to be provided for this purpose in FY 1964; US \$5 million in FY 1965 and a possible total of US \$29 million through 1968. Money generated by the loans will be used to provide technical assistance, consulting services and participant training in future years.

(2) The proposed loan for Development of Market Potentials of US \$2 million in 1965 at 5% per year under a ten year term with a three year grace period is proposed to underwrite the purchase of shares in an export oriented meat packing complex by Colombian producers.

During the Team's first meeting with the Ministry of Agriculture he expressed some misgivings about a high priority for additional production credit for beef production due to possible inflationary consequences. At the same time he held that Colombia must improve the efficiency of its livestock production and start working toward the Ministry projected goals of an export of 600,000 head of cattle equivalent in meat and provide for a per capita consumption of 30 kg. of beef by 1970. If some group or groups are prepared to tackle the problem with a well rounded and organized plan so that domestic market prices are not greatly changed, it is the opinion of the team livestock participant that the Ministry will support the program wholeheartedly.

In view of the short period of time available, it was necessary to rely on reviews of previous studies on the livestock industry (see list of references), statistical reports; guidance from the US AID Livestock Advisor; technical personnel of the Rockefeller Foundation; limited observations of livestock production and marketing activities; and interviews with personnel engaged in various phases of the livestock industry. The contacts made were in the four geographical areas indicated below. 1/

The sources of information used indicate the whole livestock industry is in a "stagnant" situation but there are individuals and organizations that are willing, with some assistance, to rapidly advance the contribution of the livestock industry to the economy of Colombia.

1/ Sabana (area around Bogota): Four dairy farms, one beef ranch, the ICA experiment station at Tibaitata, the National University of Bogota, the Minister of Health, the Director of U.S. Peace Corps, the Rockefeller Foundation, Banco Ganadero, Industrial Ganadera Colombiana (IEUGAM) and several retail super markets, farm produce markets and meat markets.

Medellin: Medellin University, ICA experiment station and the municipal stockyards.

Monteria: ICA experiment station at Turipana and four cattle ranches.

Cauca Valley: ICA experiment station at Palmira, two cattle ranches, a dairy farm, the municipal slaughterhouse at Palmira and the Universidad Nacional de Colombia at Palmira.

Colombia has a good base in animal numbers and experience from which to start a vigorous livestock industry. At the end of 1962 the cattle population was estimated at 15.8 million and expected to increase to 16 million head in 1963. Of these, 3.3 million are used primarily for milk production and the remainder maintained for the production of beef. The hog population is estimated at 2.3 million, sheep at 1.4 million and goats at 365,000. These figures reflect an increase over 1961 of 7% for swine, 3.9% for sheep and 1.4% for goats.

The slow rate of expansion of the cattle population (1.8% per annum) is attributed to poor management practices, low breeding efficiency, high calf mortality, low quality feed, poor transportation, disease, parasites, the slaughtering of pregnant cows, and inefficiency in the marketing system. In addition, the pricing system for beef has had a retarding effect on the development of the cattle industry. The prices received by the producers are fixed by the Government (presently at 2.60 pesos per kilogram) and although periodic increases have been granted, they have not kept up with increasing production costs; mainly due to rising land values, transportation costs and the number of "middle men" involved. This has discouraged new investments by the livestock industry and prevented existing producers from improving the efficiency of their operations. Also all meat, regardless of cut and quality, retails for nearly the same price in the markets which does not give the producer an incentive to improve the quality of the beef.

The number of cattle slaughtered during 1962 was estimated at 1.7 million head, an increase of 0.7% over 1961 but per capita consumption was down 2% from the previous year due to the increase in population.

Dr. H. M. Riley's study (Beef Production in Colombia 1965-1975) showed that attempts have been made to export beef but these have largely failed due to lack of "know how" in assembling and processing of meat for export and discouragement by the GOC to prevent rises in domestic prices. It appears that the attitude of the government is changing toward export and there are now organizations capable of taking the necessary action to serve foreign markets and make much more efficient use of the cattle being produced in the northern part of the country. (This view was endorsed by the Minister at the final meeting on November 21.)

The organizations in best positions to provide the needed impetus and assistance are (1) Banco Ganadero, a bank capitalized by a tax on livestock, but yet lacking in resources to meet the needs; (2) The Fondo Ganadero, an organization of livestock producers which loan cattle on share contracts generally to persons who have land but do not have access to credit in terms of money; and (3) Industria Ganadera Colombiana (INUGAN), an organization of livestock producers, feed companies, banks, breweries and others that are devoted to livestock production problems and keenly interested in building an export trade. US AID already has close contact with these organizations. In view of this the planned program of assistance should be carried on through them. This approach is particularly encouraged as the team has found a history of best activities in Colombian agriculture by semi-autonomous agencies or private enterprises engaged in the promotion of specific products.

INDUGAN submitted a memorandum to the Minister in November, 1963 stating surveys had been made with sources in Spain that were desirous of importing Colombian beef, provided a dependable supply could be guaranteed. Similar general responses have been received from France, Italy and Switzerland. The memorandum goes on to point out that they are ready to invest and seek additional capital for developing the necessary export facilities, and will carry through provided the organization can obtain an official guarantee that they can carry on a normal business for a period of years sufficient to amortize the capital investment. This request is made in order that buyers can be assured a continuing supply.

The Banco Ganadero has the basic organization for the needed supervised credit, including some personnel with experience in farm management. It seems, therefore, logical that US AID should coordinate its 1964-68 credit program and their technical assistance on production through this organization. The ability of personnel in the organization to provide supervision in farm management in connection with the loan must, however, be strengthened through in-service on-the-job training with appropriate assistance from farm management and marketing specialists.

One assurance AID should require before launching into any phase of the export trade, however, is that a balanced program exists, that is, proper plans are made to replace the extracted beef on the domestic market by other livestock or crop products. The bank loans, therefore, must be free enough for loans in other livestock enterprises which will release beef for export. No other class of livestock is being produced in sufficient quantity to take up the slack but with proper planning and some assistance poultry products could be increased rapidly since there is a small but well operated industry already in operation. Additional pork could be obtained by better feeding of swine presently going to market and also beef production can be expanded by utilization of calves from the dairy herds in the Sabana which are largely wasted at the present time. There are no statistics available but producers in the Sabana area estimate 3 - 10,000 animals per year are now being slaughtered the first few days after birth. If concentrate feeds were available at reasonable costs dairy production could be increased 30-50% with the present cow population. To develop the required balanced program will require a greater supply of carbohydrate feeds and at lower prices than presently exist in the country. In view of the emphasis on sugar and cotton production on the better lands it will be sometime before this major problem can be solved, particularly in the northern part of the country. It would appear, therefore, that the US Feed Grain program can fit this need on an economical basis, possibly using grain sorghums.

In order to insure uniform quality and a reliable supply, some dry-lot feeding will be required. Concentrate feeding will also be required to assist in the expansion of the supply of beef as the herds will not be able to expand rapidly enough to adequately meet the demands. Coupled with this will have to be a step up in the annual rate of herd expansion (1.8% per annum) and the extraction rate (13% per annum) to meet the 1970 goals. If the export industry is developed along the Atlantic Coast - and all indications are that this is the logical place - then concentrate feeding to produce an additional 50 - 100 kg. of live weight per animal would provide profitable returns. This is particularly true for cattle produced in this

area since the grasses and forages common to the area or those that can be produced at reasonable costs are too low in quality to furnish cattle properly for export. The quality of the present cattle will not return a margin on extended dry-lot feeding but they should make gains of 1 kilogram or more per day on 60-120 day feeding. Such a system would be much more efficient than the present system of transporting animals all the way to the Cauca Valley for further grass fattening. Marketing at an earlier age and at 25-50 kg. heavier carcass weight is the most expeditious means of attaining the goals of the industry. Furthermore, a stepped up program in the north coast region will provide the needed stimulus to other areas for greater and more efficient production. Based on this discussion the following recommendations are offered with respect to the livestock credit program:

- (1) That US AID focus its program of support to the livestock industry on promotion of an export market in beef.
- (2) That activities of AID participation be coordinated through the Ministry of Agriculture but direct action be through the Banco Ganadero, INDUGAN, and the Federacion de Ganaderos (Livestock Producers Association).
- (3) That the AID Mission work to insure a balanced program through stepped up production of other livestock products to back up the export of beef.
- (4) That AID provide the production credit as requested but the credit for market development be channelled through INDUGAN in which case considerably less than the \$2,000,000 will be required.
- (5) That after a decision is reached by GOC to enter into a meat export program, (a) a marketing technician be furnished by USDA for a period of about one year to help in making surveys of cattle production available for the export market, to advise in techniques of forecasting and developing supplies, and to advise on prices especially in world markets; (b) a meat cutting technician be furnished by USDA for a period of about three months to train Colombians in cutting meat for the export market; (c) a meat grading specialist be furnished by USDA for a period of about three months to train Colombians in grading of meat for export; and (d) a farm management technician for a period of 6-months to work with the Banco Ganadero in training bank personnel on supervised loan procedures. The Supervised Credit Team recommended in this report should also work with the Banco Ganadero to train bank personnel and advise on loan policies designed to assure proper planning for a uniform supply of cattle.
- (6) That AID recognize that conditions in the livestock industry and its relationship to the Colombian economy are likely to change so rapidly that it will be difficult or impossible to predict the exact types of technical assistance which will be required in terms of specific skills, therefore, development grant funds should be budgeted on a man-month basis with flexibility in terms of the actual technicians.
- (7) That AID encourage Banco Ganadero and INDUGAN to work closely with the ICA research stations on regional nutrition and management problems.

(8) That AID's program be flexible enough to permit working up "packages" that would make use of short term specialist from USDA on animal nutrition, reproductive physiology, artificial insemination, animal breeding, carcass inspection or other special problem areas when it is recognized that such research specialists are needed to make the livestock development program effective. Proposals of this nature should be developed through the Agricultural Research Service.

(9) That AID encourage the Colombian livestock producer organizations and others to use their resources through ICA and the Universities to provide support for training personnel with scholarship grants and participant training and provide grants for research.

b. Animal Disease Control - A development loan to the GOC amounting to US \$2 million in FY-1965 and totaling US \$20 million over a seven year period will be used to support the proposed Animal Health Institute. Because the benefits to be derived are necessarily long range, interest rates must be low and repayment scheduled over a period of 30 years.

The Animal Health Institute is to act as a regulatory agency under the Ministry of Agriculture. Plans for organization, objectives, costs, etc. are set forth in Plan de Sanidad Animal which was prepared by Departamento Administrativo de Planeacion and Sernicios Trecnicos, Secto Agropecuaria, Bogota, 1963. The Plan provides a general plan for establishment of clinics and diagnostic laboratories and specific plans, based on Dr. Grey's report, for an Aftosa control program starting in the Atlantic Coast area. The request for the 20 million dollar loan is essentially for the Aftosa program.

At the initial briefing the Minister gave high priority to the Aftosa control program. This is a very worth objective but one that does not appear practical at the present time for the reasons that (1) there are not sufficient qualified personnel to carry out an effective control program; and (2) the vaccine presently available has too short an effective period (3 months) for use in a control program. Therefore, in the opinion of the team livestock participant, US AID is wise in proposing to initially support veterinary training and research through the National University and ICA: and at the same time recruit a qualified veterinarian, either by direct hire or contract to work with the Ministry, the Rockefeller Foundation Veterinary personnel and Planeacion in further formulating and organizing a regulatory program. These goals warrant high priority but eradication or wide area control of Aftosa should be given low priority until a better vaccine is available, additional trained personnel are on hand and the cattlemen are "conditioned" to the need of a control program. The AID program should, however, have sufficient flexibility to provide ready assistance in regulatory work as an organization is developed.

Although cattle losses from Aftose are relatively small (estimated at 1-3%) as compared to overall mortality rates, it should be recognized that losses in efficiency of production due to infection are a serious economic factor. Data from one dairy herd in the Sabana show a 30% loss in milk production due to infection, coupled with lowered breeding efficiency and higher incidences of mastitis because of lowered resistance and difficulty in milking during the infection period. Observations with

steers at Tibatata indicate rates of gain are lowered by 25-30%. The better managed herds recognize the economic consequences of these losses and are vaccinating at 3-6 month intervals. This frequency of vaccination is costly in labor and money, therefore, search for a more effective vaccine should be supported. This can be accomplished at present through the Pan American Health Institute. When a more effective vaccine is available then AID should be prepared to provide assistance in the form of technicians or loans to get the vaccine produced.

An activity which conceivably could make a very significant contribution both to efficiency of production and protection of human health would be program of vaccination for Brucellosis. In this program one vaccination usually provides effective economic control of the disease. The contracted veterinarian proposed could work with Ministry personnel in judging the relative merits of such a program in relation to other disease programs.

Recommendations on Disease Control

(1) That since diseases and parasites are great problems in the livestock industry of Colombia, AID strengthen its staff in this field with a direct hire or contract veterinarian for two years to work with the Ministry personnel in planning and organizing regulatory programs for disease control.

(2) That AID give high priority to support of disease research through ICA and the National University.

(3) That although none of the existing proposals on disease control offer an opportunity for a package proposal to USDA, AID consider making use of USDA contract when appropriate situations develop.

c. Animal Husbandry Training - Although this is part of the overall Livestock Development Program and specific proposals are covered in the section of the report on Advanced Agricultural Training, the livestock participant would like to reiterate that support of training in this field is absolutely essential to make the proposed livestock development program effective. Present plans provide support for graduate level training but AID's program planning should provide sufficient flexibility to extend this to the undergraduate level when a program for this level of training has been established in the Universities as the eventual self-sufficiency of Colombia to carry on the program proposed under Part 1 of this section is largely dependent on improved proficiency in Animal Husbandry.

Livestock References *

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3.&4. Basic Resources and Agrarian Reform

The projects for which funds were requested in FY-65 for Agrarian Reform are substantially land development, irrigation, drainage and watershed development. Agrarian Reform generally has a much broader meaning than land and water resource development and especially is this true when one notes the items covered in the Agrarian Reform laws of Latin America. Taxation, credit, expanding size of operations of the small farms, subdividing large holdings, voluntary expansion of agriculture into new land areas, improvement of land titles and contract law are just a few of the activities commonly considered a part of Agrarian Reform programs in addition to the development of land and water resources. In fact some would consider Agrarian Reform as broad as rural development. The discussion of a specific definition is not important except to indicate the need for AID to support a much broader range of projects under this heading than those for which funds were requested in FY-65.

One project of particular significance is that of establishing land titles. INCORA should be helped with its program to grant land titles to those who are using it and who are considered to be owners of the land they use but who have no titles. Those persons who are developing farms on "free" or public lands should be considered in granting titles. A second phase of this activity should be the rapid extension of the program to return land to public ownership if it has been unused for ten or more years. Although this would apply only in some parts of the Llanos and other isolated areas, it is particularly important that it be accomplished (easier and it will save conflict later) in those areas where the government is planning to build new roads and to make other investments to encourage land settlement. AID should reconsider and request support for this effort by INCORA. The Beelar proposal should be expanded. The first priority should be for title purposes, but it can be used also as a base for land evaluation.

Land and Water Resource Development

The proper utilization of a country's land and water resources is one of the basic necessities for its economic development. With ever increasing demands for production of food and fiber, water for domestic and industrial use, irrigation and hydroelectric power development, and the necessity of protecting areas from intermittent flooding, proper planning for the most economic use of a Nation's land and water resources is becoming increasingly important with each passing year. Colombia is extremely fortunate in having extensive undeveloped resources in both land and water. Timely, well-planned development of these resources will make it possible for Colombia to increase its agricultural output and provide additional areas on which to establish family sized farms for its people.

Although the large number of minifundios existing in the developed river valleys and the extensive use of extremely steep slopes for small farm operations make it appear that there is a heavy population pressure on the agricultural lands of the country, Colombia has sufficient undeveloped or under-developed land

to provide the majority of its agricultural population with farms of sufficient size to provide for an increased standard of living.

The time allotted for this study was insufficient to allow a first-hand investigation of all potential development areas of the country such as the Llanos and tropical lowlands east of the Andes Mountains. From discussions with Mission and Colombian officials it appears that this is the area which will provide for much of the future long-range development of the country. Although immediate development plans are primarily concerned with the river basins of western Colombia, the large sparsely settled areas to the east should be kept in mind and plans initiated for the construction of roads and other communication facilities into the area and policies and regulations established for the orderly colonization of these areas.

Complete development of the water and land resources of Colombia to provide for utilization of these resources for the maximum benefit of its people is a long-range program (50 to 100 years). Many projects for drainage, flood control, power, and irrigation have already been identified. With the limited funds available for construction of these projects, careful analysis is required to establish priorities and assure earliest development of those projects or portions of projects with the highest economic return for the investment required. In the United States, the Bureau of Reclamation of the Department of the Interior has developed a program of studies for use in developing projects of this type. This program is designed to determine the engineering, economic and financial feasibility of any land and water development proposal. In addition, political feasibility, including time, rate, and sequence of development, must be given full consideration in any such project proposals.

The following sequence of studies designed to adequately determine project feasibility has been accepted as a pattern by many countries around the world and is acceptable to most international lending organizations. These studies are applicable to Colombia as well as to other nations.

Reconnaissance Investigations--The purpose of reconnaissance investigations is to determine, with a minimum of expenditure in time and funds, whether potential developments are worthy of further detailed consideration. The decision in this type of investigation is based on a minimum of field data and a maximum of judgment. Thus, in all phases of reconnaissance investigations maximum uses should be made of experience, judgment, and improvisation or adaptation of results from detailed studies on nearby or similar projects. Often this procedure will suffice for such diverse aspects of the evaluation as determination of the available water resources, sedimentation rates, construction and operation and maintenance and replacement costs, agricultural economics effects and other relationships known to be reasonably consistent within an overall area or river basin.

Estimates made during a reconnaissance usually are prepared from cost graphs and overall unit cost, such as the cost per cubic yard of dams, per lineal foot of canals, per acre for laterals and drains, per mile of transmission lines and roads, and per kilowatt for powerplants, which have been experienced from constructing comparable structures.

The investigations are based on available data, varying in quality and quantity, and a minimum of reconnaissance field work and studies. The investigations should be concentrated on features of greatest cost or those factors likely to control the engineering or economic feasibility of the whole development. Evidence of local interest in the prospective development also should be considered, as this factor is often of paramount importance in determining program requirements for future detailed studies.

The reconnaissance investigations of projects should formulate and choose between major alternative plans to develop or improve an area, use, or feature; establish the need for development or improvement; establish the apparent economic justification and financial feasibility of contemplated improvements; and recommend a course of future action. Estimates should be included of requirements for time, money, and personnel to carry out the recommended studies or other actions.

If the results of the reconnaissance show that the project is infeasible, no detailed investigation is made and the unnecessary expense that would be involved if a project investigation had been undertaken without first making a reconnaissance is avoided.

Reconnaissance investigations are made to determine only if more detailed investigations are justified and to eliminate alternates. They should not be used for the purpose of establishing the feasibility of a plan in the detail required for authorization proposals.

However, in feasibility investigations, reconnaissance estimates may be accepted in lieu of more detailed estimates for minor portions of the projects if there are no critical problems involved.

Feasibility Investigations--The purpose of feasibility investigations is to determine within a reasonable degree of accuracy whether a potential project is or is not feasible. This type of investigation is used to support a recommendation for authorization of feasible projects. At this stage, decision on major aspects of the plan should be made, but some alternates may remain unresolved where the decision requires detailed studies but would not substantially affect the feasibility of the plan. Thus, the investigation need only be made in the detail required to be reasonably certain of feasibility and some details not critical to establishment of overall feasibility may be deferred until the definite plan stage. The data on which the conclusions are drawn must be of such quantity and quality as to provide reasonable assurance that the development will produce at least the values estimated and that it can be constructed for the estimated costs.

Feasibility investigations should not be started until reconnaissance investigations have shown a probability of feasibility. They should develop and define the specific engineering and operating plan and determine whether a proposed development has engineering and economic feasibility and justification under anticipated economic conditions. Feasibility investigations include analyses of resources and need for the prospective development, estimates of project accomplishments, estimated capital costs of construction together

with annual operation, maintenance, and replacement costs, repayment probabilities, engineering and economic practicability of the plan, and other pertinent items.

On investigations of large projects, where detailed pre-authorization investigations would represent a very large investment in time and funds, a greater measure of judgment will be used, in conjunction with readily available data, as the basis for certain estimates. Boards of consulting engineers, geologists, economists, and other technical specialists properly may be used under such circumstances with consequent saving of time and expense by substituting experienced judgment for more detailed data. Reconnaissance estimates may be accepted in lieu of more detailed estimates in the case of minor features where the feature costs represent only a small percentage of total cost and there are no critical problems. Detailed studies of representative sample areas may be adopted in lieu of complete detailed investigations in the case of land classification, economic surveys, and distribution and drainage cost estimates.

In the feasibility investigations, decisions on the major aspects of the plan must be made, but the detailed studies required for some alternatives may be deferred and the selection between the alternatives left unsolved, until definite plan studies are made after authorization, where this procedure would not substantially affect the feasibility of the plan. Investigations should be sufficiently complete so that the total estimated cost of a contemplated project will be known with reasonable accuracy, but with the expectation that further and more detailed investigations might shift the distribution of the benefits and costs among the individual features of the project.

During the course of a feasibility investigation, if the detailed studies of a project or a subdivision reveal a lack of feasibility and justification for a recommendation for authorization, the investigation should be continued only to the point necessary to show infeasibility under existing and foreseeable conditions.

Definite Plan Investigations--The purpose of definite plan investigations is to reappraise the feasibility of a project after a project is authorized and immediately prior to initiation of construction, to firm up those factors for which detailed study was deferred, and to resolve the selection among the remaining alternatives where there is a choice not resolved in the feasibility report. These investigations are summarized in a definite plan report to be used as a basis for final contract negotiations, scheduling and programing of design and construction activities, and as the fundamental source of information for budget justification and source of information for officials and interested agencies.

When circumstances warrant, to the extent practical, the detailed coverage in the definite plan report can be limited to the findings on the engineering and financial feasibility and economic justification of those works proposed for early construction. However, if these works are a part of a unit of a larger project and the feasibility of such works is closely related or dependent upon other features not proposed for early construction, sufficient information must be presented on these other works or the overall project to

establish feasibility of the works proposed, present a firm basis for final contract negotiations, and to justify proceeding with the works under consideration. In all cases where the works proposed for initial construction are to be used for irrigation, sufficient detailed land classification information must be assembled.

Recommended Assistance--Colombia has, through the use of its own personnel and various engineering firms, accomplished reconnaissance investigations of many basins and, in some cases, proceeded directly to the definite plan and final design and construction phases. Although in a few isolated instances where development needs are so great as to make economic feasibility and academic exercise, this procedure may be acceptable; it is usually undesirable, and where development loans are required it is completely unacceptable. This is especially true for irrigation projects in Colombia where natural rainfall in most areas is sufficient for crop production and the economic soundness of increasing production by irrigation requires extremely careful analysis to determine feasibility.

To assist the Colombian government in the reconnaissance of areas not yet studied, completion of feasibility investigations on projects identified, and the solution of technical problems on projects already completed or currently in the design and construction phase, it is recommended that AID include in its program the following activities:

a. Under a Participating Agency Service Agreement obtain from the Department of the Interior, Bureau of Reclamation, a basic Land and Water Development Planning Team to work with INCORA and other Colombian agencies involved during the next four or five years. It is recommended that this team consist of four to five technicians assigned for the full term of the program with additional specialists called in as needed for short details. A team of this type would probably be made up of a planning engineer, an agricultural economist, an irrigation engineer, a soil scientist, and, if extensive land settlement activities are involved, a land settlement specialist.

b. Under a Participating Agency Service Agreement obtain the services of a two- or three-man team for three months, or longer if necessary, to assist INCORA and IGAC with the establishment of standards and procedures for the rapid titling of agricultural lands. It is expected that this would be an extension and expansion of the Beelar proposal. Personnel of this type may be available from one of several agencies in the United States Government, and selection of the most appropriate agency will require further discussion with AID--Washington and the agencies involved.

The staffing pattern suggested for the above activities is based on the premise that the United States technicians will serve as advisors and instructors with actual work programs in all cases being accomplished by Colombian personnel of the appropriate Colombian agencies. United States technicians would provide direction as to studies required, standards and procedures for such studies, and extent and quality of data required to support feasibility reports and loan applications.

In some areas of development where complete basin or regional plans for rural development are involved, close coordination and cooperation among these two groups and advisory groups from other U. S. Government agencies will be required. It is expected that such coordination will be handled by direct hire personnel on the USAID Mission staff.

Projects Studied--During the course of this study, field trips were made to the Sabana de Bogota, upper Magdalena Valley around the Coello and Saldana projects, the Sinu Basin, the Cauca Valley, and the valleys of the Rio Cesar and Rio Rancheria. All of the areas visited showed possibilities for additional development of the land and water resources potential. These possibilities are discussed in the following paragraphs:

Coello-Saldana Irrigation Projects

These two irrigation projects are located about 12 miles apart in the Department of Tolima in the upper Magdalena Valley, approximately 100 miles southwest of Bogota, and include a total of about 25,000 hectares or 62,000 acres.

The projects were constructed about ten years ago at a cost of approximately \$12,500,000 (U.S.). During the decade of operation, no payments have been made on the construction investment by project farmers, and operation and maintenance costs have exceeded income by approximately \$1,500,000 (U.S.).

The serious financial difficulties of these two projects have been caused by a number of contributing factors including the design and layout of the irrigation system without the benefit of a land classification to determine the irrigable acreage suitable for a sustained, profitable irrigated agriculture^{1/}; high annual rainfall (about 52 inches) which makes the irrigation of crops, other than rice, economically questionable and thus resulting in non-irrigated use of approximately half of the project lands; certain errors in project design caused by insufficient basic data; lack of an organized irrigation district with definite project boundaries; no water user representation in the program of project operations; inexperienced project operating personnel; lack of irrigation experience on the part of water users; no program of on-the-farm assistance to teach water users how to develop land for irrigation and make proper applications of water; inadequate irrigation agricultural research applicable to the project area; serious weed infestations on the farms and in the irrigation distribution and drainage systems; lack of adequate drainage; and extremely serious depositions of sand and silt at various locations in the project distribution system.

It is recommended that the Land and Water Development Planning Team include in its activities a program to assist in completing an analysis of the causes for financial difficulties of the two projects and to determine what action might be taken for possible rehabilitation of the projects:

^{1/} The Coello Project was designed and constructed prior to a soils inventory of the project area and Saldana Project construction was based on a soil survey which was not adequate for irrigation land classification purposes.

- a. Reevaluate the existing soil surveys of the two projects on the basis of irrigation land classification standards, including all possible areas of project extensions.
- b. Conduct a detailed study of the causes of the serious depositions of sand and silt at various locations in the project distribution system. This should include a complete study of the hydraulics of the entire water supply system, including the two rivers at the point of diversion, and review of sand and silt source areas and possible land treatment measures by the Watershed Management Team.
- c. Based on the reevaluation of the soils of the projects, the sand and silt deposition studies, and on economic study of probable cropping practices on the projects, a complete analysis of the existing projects should be made to determine possible modifications, reconstruction, project drainage, project extensions, etc. Such analysis should include an economic evaluation of the costs and benefits of all suggested changes in the projects. If such economic evaluation should show that the costs of proposed changes and improvements in the projects, plus continued operation and maintenance costs, exceed expected benefits, it may be desirable to recommend abandonment of parts or possibly all of the irrigation systems.
- d. If after completion of the above recommended studies it is determined that the projects, or parts thereof, shall continue to operate as irrigation projects, the following additional actions are recommended:
 - (1) Complete the project modifications, reconstruction, drainage and project extensions that have been determined to be economically feasible.
 - (2) Organize one irrigation district to cover the two projects, define district boundaries and develop a water users organization which would have definite responsibilities in management of the district, and employ an experienced irrigation district manager.
 - (3) Based on the water users ability to pay, recognizing the requirements of production and family living costs, determine the amount of the total construction costs which the water users will repay over a designated period of time and set a date when initial installments are to be paid by all water users within the district. Determine the expected operation and maintenance costs each year in advance and require all farmers within the district to pay their share of such costs. This procedure of annual assessments for all water users within the irrigation district will bring about accelerated development of the irrigable lands.

(4) Provide the water users with on-the-farm technical assistance to teach proper methods of land development for efficient distribution of irrigation water, methods of water application applicable to crops and soil conditions, and methods of adequate surface drainage.

(5) In cooperation with agricultural research groups, commodity organizations and water users, set up a series of demonstrations on the farms of selected water users to study and demonstrate the economic value of new crops, improved varieties of crops, desirable combinations of crops and planting schedules to assure maximum returns per hectare each year, soil fertility requirements, weed and insect control, and proper water management practices.

Rio Cesar Basin

The Rio Cesar River Basin has an area about 2,500,00 acres of relatively flat valley lands which comprise the majority of the flat land of the Department of Magdalena. Practically all of the valley area is between 200 and 300 feet above sea level. The climate is tropical, with average temperatures between 81° and 84°F. Annual rainfall throughout the valley ranges from 32 to 59 inches. The months of December through February are extremely dry.

Rapid agricultural development, especially in the Codazzi area, has taken place in recent years and is being accelerated at the present time. Cotton is the principal crop presently grown on the newly developed areas. Yields are exceptionally good. Many thousands of acres of land which appear to be of good quality still remain in brush and jungle. A limited number of acres are presently irrigated by direct diversion from the river and side streams.

From the limited information available it appears that Colombia could initiate a land settlement and development program in the upper part of the valley within a period of a few months. To initiate such a program, a refinement of the presently available reconnaissance soil survey should be undertaken to the degree necessary to select areas of adequate fertility and topography which would support economic production of crops without irrigation. Accompanying the land inventory review should be an economic study to determine the types of crops which can be most profitably grown in this area.

Following these initial studies, steps could be taken to start settling the selected areas in economically sound family sized farms. Several thousand families could very probably be settled in the area during a five-year period. The extent of Colombian assistance for this initial type development could be the provision of roads, supervised credit and assistance in clearing, and land preparation of a portion of each farm unit.

The development and settlement of the better land areas in the upper part of the valley would be only a start toward total development of the potential land and water resources of the basin. With concentrated efforts toward an

overall river basin approach to complete development of the land and water resources of the Rio Cesar River Basin, this area appears to have possibilities of equaling the Cauca Valley in value of agricultural production within the next two decades.

The following recommendations relative to the development of the basin are made on the basis of review of the limited land and water resources data available and an aerial and ground inspection of the basin:

- a. Proceed immediately with investigations leading toward early settlement of selected land areas in the upper portion of the basin.
- b. Plan and initiate a program of basic data collection for the entire basin to supplement the limited data presently available.
- c. Through use of the technical assistance team previously discussed, other available technical assistance, and Colombian personnel, proceed with a reconnaissance investigation of the entire Rio Cesar Basin to determine potential development for further consideration.

Rio Rancheria Basin

The foregoing description and recommendations for the Cesar River Basin have very similar applications to the Rio Rancheria Basin with the exceptions that much less land development has taken place to date and that the lower portion of the basin has much less rainfall, thus making the possibility of economic irrigation development more attractive.

Since the river basins are very similar and contiguous, it is suggested that the two be studied together.

Sinu Basin

Excluding the lower valley of the Magdalena River, most of which is inundated during the greater part of the year, the Sinu Valley is the second largest contiguous valley in western Colombia being but a few thousand hectares less than the rich Cauca Valley. It is typical of many of Colombia's rivers with an agrading bed and natural dikes built up along its banks. The valley floor slopes away from the river to low points near the base of the bordering mountains. These low areas are subject to flooding from river overflow, and natural drainage from the surrounding hills.

Due to extremely flat slopes, these areas remain flooded for an appreciable period of time. A report made in 1962 by R. J. Tipton and Associates of Denver, Colorado, estimated the total area of farm lands in this valley at 310,000 hectares (775,000 acres) divided 180,000 hectares (450,000 acres) of land with good natural drainage, and 130,000 hectares (325,000 acres) with poor natural drainage. From an aerial reconnaissance of practically the entire

valley, and a ground reconnaissance of the Monteria - Cerete - Lorica area by members of the team, it appears that the majority of the valley lands are very fertile and that the total output of the area can be greatly increased by proper development.

Development potential of the basin was discussed with personnel of the Corporacion del Valle del Magdalena - Sinu (CVM), and several earlier reports on this basin were reviewed. The current program of INCORA and CVM for this area calls for the initiation of construction this year on a drainage and irrigation project in the Monteria - Cerete area to drain approximately 75,000 hectares (187,000 acres) and irrigate a pilot area of 7,000 hectares (17,500 acres). A reconnaissance study of the entire basin has been made, but collection of additional basic data and further study of the basin are required to develop suitable plans for the complete basin development.

It is recommended that the Land and Water Development Planning Team include as a part of its activities the following program of assistance in the Sinu Basin:

- a. Assist in the establishment of a conservancy district to include the lands benefited by the project, define district boundaries, and develop a local organization which would have definite responsibilities in management of the district.
- b. Assist in the establishment of schedules for repayment of construction costs and operation and maintenance costs.
- c. Assist in the training of operation and maintenance personnel to assure satisfactory operation of the project.
- d. In cooperation with research groups, commodity organizations, and farmers, set up a series of demonstrations on selected farms in the project area to study and demonstrate the economic value of new crops, and planting schedules to assure maximum return per hectare, soil fertility requirements, weed and insect control, and proper irrigation practices.
- e. Assist in providing the farmers in the project area with on-the-farm technical assistance to teach proper methods of land development for efficient distribution of irrigation water, methods of water application applicable to crops and soil condition, and methods of adequate surface drainage.
- f. Assist INCORA and CVM in the collection and evaluation of economic data in the pilot irrigation area to determine to what extent expansion of irrigation in this region is economically justified.
- g. From experience gained on this project, assist INCORA and CVM in planning future development for the Sinu Basin.

Cauca Valley Area

Plans for irrigation and drainage developments in the Cauca Valley include, among others, two projects (namely the Roldanillo-La Union-Toro Project located on the west side of the Cauca River starting approximately 100 miles north of Cali, and the Bugalagrade - Cartago Project located on the east bank of the same river commencing approximately 72 miles north of Cali, the principal city in the valley).

The prevailing climate in these two project areas is tropical though tempered by the nearness of the mountains on both sides of the valley and the elevation of approximately 3,000 feet above sea level. The average monthly temperature is about 76°F. The typical weather pattern shows two rainy seasons and two dry seasons each year. The wettest months are April-May and October-November. Average annual rainfall in the two areas ranges from 38 to 47 inches.

Approximately 117,000 acres are considered as irrigable lands in the two projects. In general, the soils are composed of alluvial sediments or transported materials of relatively good quality suitable for intensive cultivation.

Construction was initiated on the Roldanillo-La Union-Toro Project in 1959. Completed to date is a combined intercepting drainage and irrigation canal along the western boundary of the project, a portion of the main drainage canal along the central axis of the project, two pumping stations, and a conveyance canal connecting one of the pumping plants to the intercepting canal. INCORA and CVC are planning to establish irrigation and drainage districts in the two project areas for which there is no model in Colombia. They are planning to purchase land to add to the small holdings of those farmers that can handle a commercial operation. The issue over Agrarian Reform is sharply drawn in these areas and is intensified by the efforts to expand sugar production. The team feels that on these projects CVC has a very good chance of working out a reasonable compromise between those who oppose any form of Agrarian Reform and INCORA.

To assist INCORA and CVC in obtaining construction loans for completion of these two projects, if such loans are desirable, and to assist in the establishment of the irrigation and drainage districts, it is recommended that the Land and Water Development Planning Team, previously discussed, and a lawyer from the Land Tenure Center assist INCORA and CVC in the completion of necessary feasibility studies to meet the requirements of the loan agencies and in the establishment of the irrigation and drainage districts.

When project construction is resumed on the project west of the Cauca River and started on the project east of the river, it is recommended that the Land and Water Development Planning Team provide the necessary technical assistance in project construction, operation, and maintenance and on-the-farm assistance, as previously described for the Sinu Basin, to assure the most efficient and successful operation of the irrigation projects and the best use of the irrigable lands.

Sabana de Bogota

The region known as the Sabana de Bogota encompasses the area around Colombia's capital city, including the drainage basin of the Bogota River and its tributaries as well as the adjoining Fuquene Lake watershed.

Development of this region is principally oriented toward support of the City of Bogota. It provides the water supply, an appreciable amount of the power supply through hydroelectric development, and much of the dairy, meat, and other produce required by the urban population. As in other river basins of Colombia, drainage is one of the principal problem areas. Although the valley is at an elevation of over 8,500 feet, the Sabana floor is flat with many streams showing agrading characteristics with natural levees built up along their banks above the general elevation of much of the surrounding areas.

Development of this area is being planned by Autonomia de la Sabana de Bogota (CAR), a regional organization similar to CVC and CVM. Included in its plans for development are several irrigation and drainage projects.

It is recommended that since most of the Sabana is in a region of high rainfall, that any proposed irrigation projects receive careful economic evaluation to assure that money spent on their development can be repaid by the water users and that such repayment, plus continuing operation and maintenance costs, does not constitute an economic burden on the affected farmers. The Land and Water Development Planning Team should include in its program of activities assistance to CAR in the preparation of feasibility investigations on projects considered for this area as well as irrigation operations and on-the-farm technical assistance when irrigation projects are constructed.

Other Land and Water Resource Development Assistance

In addition to assistance in specific project areas discussed previously, there are several general areas in the land and water resource development field in which assistance can be provided by the Land and Water Development Planning Team and by the various bureaus of the Department of the Interior. Assistance in these fields would not necessarily apply to any particular project but would be applicable to all projects of this type in Colombia.

- a. All lands which are proposed for irrigation should be classified by a detailed land classification survey to adequately determine the land areas suitable for a sustained, profitable irrigated agriculture. Such a survey is for a specific purpose as is a land capability survey or basic soil survey. These various types of land resource inventories must not be considered as one and the same and cannot be substituted one for the other.

In the proposed Basic Resources Survey, which is to assist IGAC (Instituto Geografico Agustin Codazzi) to develop the capacity to carry out the required basic resources surveys needed for land settlement and development activities of Agrarian Reform, training in irrigation land classification surveys is a necessity if a permanent profitable irrigated agriculture is to be a part of the Agrarian Reform program.

The soil scientist member of the Land and Water Development Planning Team could be of assistance in training Colombian soils personnel in the field of irrigation land classification or the Bureau of Reclamation could supply a soil scientist for this purpose on short-time detail.

b. Both in-country and participant training in the United States in the many disciplines involved in land and water resources development should be increased. Of particular importance at this time is training in project planning, operation, and maintenance of irrigation systems and land classifications. Much of the in-country training can be provided by the Land and Water Development Planning Team, but there may be instances where specialists on short-term details should be called in to conduct short courses or seminars for Colombian personnel. The training in the United States can be included in AID's regular participant training program.

Another source of valuable training is the new Centro Interamericano de Desarrollo Integral de Aguas y Tierras (CIDIAT) now being established by the Organization of American States at the University of Los Andes in Merida, Venezuela. This center will soon be in operation providing graduate level training in the planning and administration of land and water resources development programs. In addition to regular programs of study, a series of seminars are planned for top level administrators in the land and water resource development field.

c. During discussions with various Colombian officials it has become apparent that there is little or no established national policy on land and water development. It is extremely important that before extensive development is accomplished that such policy be established. Many points need to be clarified and firm decisions made. Typical of these are: (1) the relative priorities for competing water uses such as power, irrigation, municipal and industrial consumption, pollution control, etc.; (2) reimbursability of funds spent on various types of developments, including repayment period, interest rates, etc.; and (3) establishment of a national water law.

Watershed Studies

Fuquene Lake Watershed - The Fuquene Lake watershed, (Ubate) located north of Bogota, has been selected as a pilot project on reforestation and soil conservation. The pilot project is a cooperative undertaking between the Ministry of Agriculture, represented by the Sections of Soils and Forests, the Department of Cundinamarca, represented by the Secretary of Agriculture, and the various municipios, each of which has its own soil conservation council. The CAR organization also has a direct interest in the program.

The Ubate area is of strategic importance due to the fact that the basin provides a potential water supply for the City of Bogota. The valley has become in recent years an important part of the fluid milk shed for Bogota.

The watershed contains a total of 130,000 hectares of which approximately 32,000 hectares is rich valley bottom. Much of the balance is steep and mountainous and has eroded seriously due to cultivation and overgrazing. Extensive areas were observed where all of the soil mantle has been removed down to bedrock of shale and sandstone. These denuded areas constitute critical sources of sediment production which is transported down and deposited on the fertile valley land. The resulting deposition of sterile material creates fans and fills the natural drainage channels across the valley. As the agrading process continues these channels have built up levees several feet high and the channel bottoms now are at higher elevations than the adjacent valley land. Thus a swamping condition has resulted where drainage of the valley land has been impaired.

The program which is being carried out as a pilot project involves the planting of tree seedlings, principally *Pinus radiata* (Monterrey pine) and the construction of simple erosion control structures (loose rock check dams) in the critically eroded areas. The tree seedlings are produced in nurseries operated by the Ministry at Ubate and Simijaca and the Departmental Nursery at Sutatausa.

Several area plantings, ranging from 3 to 7 years age, were observed. Although the Monterrey pine appears to be well adapted to this locality and reaches rapid growth, it has demonstrated unusual abnormalities in conformation. The Mexican variety, pine Patula, appears to be superior on the basis of field trials conducted at several locations in Colombia. The rock check dams constructed in gullies have trapped sediment effectively and provide good planting sites.

Considering the nature of the problem and the extent of areas needing treatment, the work which is underway appears to offer the most satisfactory solution for stabilization of these critical sediment source areas. It is important that these areas be excluded from grazing and cultivation and, for this reason, some land acquisition is necessary. CAR has a land purchase program underway on a small scale in the Suta Valley.

When the critical sediment source areas have been stabilized attention can be given to the restoration of valley lands which have been damaged. An effective drainage system then can be planned and installed to restore these affected areas to full productivity.

Anchicaya River Watershed - Rio Anchicaya watershed, comprising approximately 70,000 hectares, drains toward the Pacific coast to the west of the city of Cali. The watershed is mountainous and naturally forested except where colonos have cleared small patches for cultivation. Many of the cleared areas have reverted to grass following a few years of cropping. The Ministry of Agriculture has initiated a pilot watershed management project under the supervision of the Forestry Section.

The stream gradients are steep as may be expected in such rugged terrain. The principal tributary of the Anchicaya is the Rio Dagua which produces extremely high sediment yield to the main river. Numerous gravel bars were observed along the course of the Rio Dagua which apparently were formed during the recession of flood flows. The main sources of sediment appear to be in the headwater areas of lateral tributaries of Rio Dagua and erosion along roadsides which is very noticeable. Landslides occur with each heavy rain and much of the debris is flushed into the rivers. Road maintenance is a continuous operation and becomes very costly.

The severity of the erosion and sediment problem is most forcefully illustrated by the depletion which has taken place in the Anchicaya power reservoir. The dam and reservoir which supplies hydroelectric power for the city of Cali was completed about 8 years ago. Original storage capacity was 5,100,000 cubic meters. During the intervening years the storage capacity has been reduced to approximately 2,000,000 cubic meters, representing a 60% depletion due to sedimentation. The power corporation is operating a dredge intermittently to maintain as much of the remaining water storage capacity as possible.

Other Watershed Studies - A number of other watersheds are being studied by various agencies. The Cali watershed, a tributary of the Cauca River, which provides the water supply for the city of Cali is being studied by the Cauca Valley Corporation. Piedras Blancas watershed near Medellin has been the center of extensive field trials to study the adaptability of different coniferous tree species. These trials have been carried out under the joint sponsorship of A.I.D. and the Forestry Department of the National University branch at Medellin.

The Institute for Agrarian Reform is contributing financially to the management of the Santa Marta watershed under a plan prepared by Magdalena Valley Authority, and to the Otun watershed of the City of Pereira, under a plan prepared by the Ministry of Agriculture. The Institute is now considering an application for assistance in watershed management to protect a large new power development for Medellin, to be financed by a World Bank Loan.

Feasibility Studies - Apparently none of the watershed studies undertaken to date has provided an evaluation of damages occurring in the watershed or the benefits which may be derived from a remedial program. Such a study is essential in assuring a sound program.

From preliminary reconnaissance of the watershed areas, the Ubate area and Rio Anchicaya appear to afford the best opportunity for undertaking comprehensive evaluation studies. More basic data is available for these areas than on some of the others. However, more detailed investigation may lead to the conclusion that other watersheds are equally well suited.

The U.S. Department of Agriculture through the Soil Conservation Service is well equipped to provide technical assistance in the specialized technical fields which would be involved in carrying out such studies. Considering the nature of the problems, and conditioned upon the desires and willingness of the Colombian government to enter into a formal contract for USDA aid, a team of 2-SCS technicians could form the nucleus of a planning party to undertake the proposed studies.

One of the technicians should have broad experience in all phases of watershed planning and possess specific training in the field of Economics. The other technician should have broad background in the technical field of watershed geology with particular emphasis on sedimentation. It would be desirable, but not essential, that these technicians possess some proficiency in the Spanish language. Estimated assignments would be for 24 months.

To provide backstopping in other technical specialties it is felt that the services of a U.S. Forest Service man in the field of Forest influences would be desirable for a 3-month assignment at the proper time during the study period. In addition, the assignment of a civil engineer (drainage specialist) from SCS for a 4- to 6-month period would be necessary to assist in the planning and evaluation of improved drainage systems. During the conduct of the studies special problems may arise which would require the short term services of other technicians in specialized fields.

In order to derive maximum benefit from the technical assistance provided by USDA it is proposed that agencies within the Colombian government furnish appropriate personnel to serve as counterparts with the US technicians. By so doing the local personnel will receive training and experience in technical procedures and methodology involved.

Soil Conservation Districts - A Soil Conservation District program, patterned after the organization in the United States, has been established in Colombia. The program is under the jurisdiction of the Chief of Soils Section, Ministry of Agriculture. A total of 5 separate districts were formed about five years ago as follows:

<u>State or Department</u>	<u>Name of District</u>
Magdalena	Minca
Lebrija	Lebrija
Cundinamarca	Ubate
Huila	Neiva
Cauca	Silvia

It is understood that several more districts will be established in the near future. Experience in the United States has demonstrated that active Soil Conservation Districts can contribute greatly to the successful implementation of watershed projects.

Basin Investigations - Considerable interest has been shown by the Director, Institute for Agrarian Reform (INCORA) to approach the problem of resource development on a basin-wide basis. In the event it is the desire of the Institute to place high priority on an overall study of underdeveloped basins, such as the Rio Cesar and Rio Rancheria, the U.S. Department of Agriculture through the Soil Conservation Service would be equipped to provide assistance in several technical fields involved in such a planning approach.

Under a basin-wide program in the Rio Cesar and Rio Rancheria a wide range of problems exist including such project purposes as watershed protection, flood prevention and control, drainage and irrigation. It would be expected that a watershed planning party under these conditions would be staffed by a full complement of planning technicians, including a planning party leader (engineer), economist, hydrologist, and geologist (watersheds). Such an organization would not be in addition to but rather would replace the proposed staffing of two technicians shown under "Feasibility Studies". On this broader staffing basis the services of the economist and watershed geologist could be diverted part time to carry out the evaluation studies proposed on other watersheds. Because of the scope of the basin investigations, it appears that the time requirement for the four-man team should be increased to 3 years. Backstopping assistance would be required to support the planning party in such specialized fields as engineering geology, drainage, and design.

The opportunity may be presented also for the assignment of a soil conservationist to provide technical assistance to landowner in developing and carrying out conservation farm plans. This would appear to be particularly appropriate in the event one or more Soil Conservation Districts was established in the area.

Contacts and Travel - In addition to the contacts made by the entire team the watershed specialist made a number of field trips to specific watershed areas during the course of the study. Following is a listing of the watersheds and the personnel contacted:

Ubate Area - Fernando Villamizar (CAR)

- Julio Garcia (CAR)

Piedras Blancas - Professor Ruiz Landa, Head of Forestry Department
Rio Nare - Colombia National University - Medellin Branch

Sinu River - Gabriel Echeverry (CVM)

Cali River - Julian Sinisterra, Chief Forester
Anchicaya River - CVC Forest Service

Rio Cesar

Rio Rancheria - - No personnel contacted

A number of reports and documents were available which were helpful in providing basic data on various projects. A very informative meeting was held with Mr. Vergara, Chief, Section of Soils, Division Natural Resource in the Ministry of Agriculture.

5. National Agricultural Planning

The A.I.D. Mission programmed in 1964 for initiation late in FY 1964 or in 1965 three high level agricultural economists or program economists, one direct hire and two under contract. These "national planning advisors in the Division of Rural Development will work through Planeacion and directly with the Ministry of Agriculture in developing annual and long term goals". "This branch of agricultural planning will also be responsible for drafting joint or group project proposals, interagency agreements and contract agreements with Colombian agencies and US operation agencies".

This appears to be a most important activity. Many issues and technical assistance needs were brought to the team's attention which could in part be fulfilled by this activity.

Following are three suggestions:

- (a) The Minister of Agriculture expressed the great need for more adequate and reliable basic data at the time needed to make policy and program decisions. Many agencies are beginning to make available important basic data*. The Department Administrativa Nacional de Estadistica has some important basic data but it could be more valuable to ongoing programs if a regional breakdown were available and if the time to publish the data could be reduced. The Banco de la Republica and a number of the commodity federations are collecting basic data which are collected with different methods and hence the results do not always coincide.

There would seem to be real merit in giving some one in the Ministry of Agriculture responsibility not for setting up a super statistics agency but rather to get the people from the several data gathering agencies together regularly. The agenda might include getting acquainted with each others operations - type of data, use, methods of collection and preparation, and timing. Out of such discussions could come some possibilities for improvement in the data system - by for example, reducing duplication, uniformly in procedures for collecting and presenting similar data, and joint archives. But in addition, such a group of technicians could more easily bring their knowledge and experience to bear on making data estimates which are needed for program and policy decisions that cannot be delayed until the final data is published.

- (b) This Planning activity could be a positive force in integrating some of the activities of the large number of semi-public agencies operating under the general cognizance of the Ministry of Agriculture and it could help resolve some of these conflicts between regional and national agencies.

The Minister of Agriculture indicated he was on the board of more than 32 semi-autonomous agencies such as the Caja Agraria, INCORA, and the Federacion de Cafeteros. A major need was staff work on the issues that are to be decided at the meetings of the governing

*See Frances Kutish 1962 AID report.

boards, what are the issues, what are the alternative decisions, and how do they affect other groups and the national economy. This involves considerable preparatory work by technicians with substantial experience. The major unused or untapped resource for helping with this assignment is the group of research technicians which is rapidly increasing in Colombia (this is particularly true with the establishment of ICA discussed under another USAID activity).

One of the functions of the planning activity might be the establishment of an agricultural research advisory council. Such a council should have as members persons who are actually research technicians with leadership responsibility for ongoing agricultural research. Such a council should acquaint themselves with the issues, the relevant research underway, and what additional research might be needed. Through such a group considerable additional information could be made available to those responsible for policy and program decisions. But also it would be a way of directing researchers to real Colombian problems. Such a council could give some continuity to programs even though administration may change.

- (c) The Planning activity insofar as possible should be performed by Colombian technicians. The activity could well provide for training of Colombian technicians. The policy of employing Colombian technicians in this activity should be explored. It could be justified as a demonstration of how to improve and give more continuity to agricultural programs.

6. Advanced Agricultural Training

The USAID Mission is requesting for FY-65 funds sufficient to employ five graduate level professors "to assist in the development of the Colombian Institute of Agriculture and Animal Husbandry, an institution which will combine agricultural research, teaching and extension". AID's support for the five faculty members is intended to be on a college contract with a minimum of two years but the need is expected to continue for at least five years. Personnel supported by AID under the college contract are "to assist in the establishment of a graduate level program for instruction in agronomy, agricultural engineering, animal husbandry, agricultural economics and rural sociology. They will be expected to establish the curriculum for instruction and to participate in the teaching program."

The team concurs with the need for many more agricultural technicians trained at the graduate level.

Few investments will be as productive over the years as those made to train agricultural technicians. More technicians are needed in animal husbandry to provide leadership for the developing livestock economy. More are needed in agronomy, genetics, agricultural engineering. More trained personnel are needed in farm management, marketing, land development, extension, and rural social organization.

The Colombian Institute of Agriculture and Animal Husbandry (ICA) has been formed in an attempt to make a greater contribution toward filling this training need. A government decree has established ICA. A director has been appointed.

To the new organization the Minister of Agriculture transferred all of the resources and personnel of the Department of Agricultural Investigations (DIA). DIA as a research organization was a going concern. Through this transfer, ICA now has a trained staff with considerable experience and many research projects in progress. Also, it has about 135 technically trained personnel at the B.S. level or above. The major leadership is provided by 18 foreign technicians and 17 Colombians with the M.S. or Ph.D. degree. There are 32 Colombians now receiving advanced training at various Land Grant Universities in the U.S. and who are receiving financial support from the organization.

ICA has experiment stations in several parts of the country including the ones at Palmira and at Medellin which are located near the agricultural colleges. ICA has total assets of nearly 500,000,000 pesos and an annual budget of 22,000,000 pesos. Rockefeller Foundation support has been approaching one million US dollars annually.

The Agrarian Reform Institute (INCORA) is supporting the new organization with 5 million pesos.

Kellogg, Ford, and Rockefeller Foundations have agreed to give considerable financial support over an extended period of time.

AID should be a strong supporter of ICA with at least as much contribution as requested for FY-65.

A special group was in Bogota in November 1963 to activate the ICA organization. Our team has several suggestions that might be of value to consider as the new agricultural graduate school is established.

- (a) Although ICA plans to place major emphasis on graduate teaching and research it should work with established Colombian universities in improving the quality and expanding the quantity of undergraduate training in agriculture. This is especially true in agronomy and veterinary medicine. Animal Husbandry is presently taught in conjunction with the veterinary curriculum of the Veterinary Schools. With the implementation of the Pritchard-Turk report the College of Veterinary Medicine at the National University in Bogota will offer degrees in Animal Husbandry. Within ICA there are 4 Rockefeller Foundation staff members and 40 Colombians working in the animal field, most of them on animal husbandry research. With this experience and competence this staff should be encouraged to assist in the undergraduate teaching. AID should also give financial support to this undergraduate teaching.

- (b) Integration of training and research has been a basic concept of the Rockefeller Foundation research in Latin America and should be maintained. Young Colombians were given jobs on research projects. If they demonstrated interest and potential they were given the opportunity for advanced training. A research assignment was available when they returned home after their graduate work. And the Colombians are expected to take over the direction of the research when they have gained the necessary experience. It is important that the training is focused on a research problem and is acquired in a large part by actually doing research. It is important also that there is an on-going research program in which he has a job when he returns from his training. This type of training and research integration should most certainly be continued. AID's usual method of selecting "participants" for training should be flexible enough to accommodate the selection process that has been followed. And AID should have a policy of supporting research by both US and Colombian personnel.
- (c) Although it may be desirable for ICA to do research in other than the basic food crops, the idea of emphasizing the development of food crops which would improve the structure and standard of living of the people is a good one and should be retained. The program should continue to recognize the basic needs of the people and the adjustments in production and in the economic and social structure of the country that are necessary to accomplish these changes.
- (d) Research programs of DIA have in the past concentrated on the physical science aspects of agriculture. One staff member is in social science with his PhD in Agriculture Journalism and Agricultural Economics and he is doing research in communications. Considerable additional staff in social sciences will be necessary. Some additional work is suggested in farm management, marketing, agriculture price policy, land development and rural sociology. Also a good social science graduate program in agriculture requires support of such disciplines as general economics, sociology, mathematics, law, etc.

Since ICA has not been active in this area it will take some time to develop experienced personnel and a research and training program. Other universities have some competent personnel who are teaching and doing research. For instance National University at Bogota has a competent staff giving advanced degree in Sociology and conducting substantial research projects. The Wisconsin AID Land Tenure research is located there. The University of Los Andes has a competent economic research and teaching program underway in which the University of Minnesota is cooperating. At Medellin and at the University of Valle there are good economic staffs.

In the beginning at least ICA should probably limit its expansion into all social sciences. Particular emphasis should probably be on farm management, marketing, and price policy. It is important, however, to make arrangements so that the social science research and teaching of other Universities can be utilized. AID, the Ministry, and the Foundations should make sure that some funds be made available to support and expand social science outside of ICA.

- (e) The agricultural extension program is now being carried on by a number of semi-autonomous agencies such as the commodity federations, CVC and agencies supplying supervised credit. These agencies appear to be doing a good job. At any rate they probably would not permit the Extension Service to be consolidated and placed under the direction of ICA as is done in the US Land Grant Universities. And there is some reason to question whether this consolidation would improve extension.

This is not to say however the ICA should not play a major role in extension. In the first place it will be training competent agricultural technician who will be working with the several agencies who have the extension responsibility. Secondly, considerable research needs to be done on what factors are important in a farmers decisions to improve production, where does he get his information and in what form will it be used. The results of this type of research should give guides to the types of adult education programs that will be useful. Thirdly, ICA should put considerable effort into putting the research results into useable form for all that will use them whether in the first grade school room or the government board meeting of the Caja Agraria. Communications will probably play on even greater role in Latin American extension program than they have in the United States.

- (f) Home Economics training is also important in a well rounded agricultural training program particularly for those in the supervised credit field. A small school has been started at the University of Caldas in Manizales which is the only one in the country. Students come from other states as well as Caldas. The School now has second year students. They badly need at least one home economics advisor and resources to train additional staff members. The school has a good start largely because of AID's encouragement and support. It would be a tragic waste of resources to withdraw all support at this time.
- (g) A library of reports and research analyses should be developed and kept in usable form.

Suggestions with Respect to the Role of the Land Grant College in the Colombian Technical Assistance Program

Land Grant Universities have a wide range of subject matter interests. These interests include a great many non-agricultural subject matter areas too.

They have taken different positions with respect to overseas technical assistance and have developed different types of organizations to do it.

However, the essential element in the Land Grant University participation is the interest of the individual staff member. This interest not only differs between individuals but also by subject matter. In some of the subject matter areas professional advancement has up to now been considered

dependent on the close association with other scholars and/or laboratory facilities. In others like anthropology and geography professional advancement requires work overseas.

Obviously one should be careful when making generalization about what Land Grant Universities in general can do. Here are some things to consider:

- (a) Universities like other agencies having a wide range of technical skills and furnish individual staff members either to advise with agencies (technical assistance) or participating in a research and training program at an overseas institution. This can be done by the person going on leave and working directly for AID or an agency in the overseas country. Or the University can make a contract to furnish a certain staff members time. In either case the staff member himself must be satisfied that the assignment is the best use he can make of his time. The experience with the Land Tenure Contract has demonstrated that it is easier to involve staff when the opportunity is available to expand research into new areas. This means selection of students, training them, getting them located in new jobs, testing ideas in new areas and publishing the results in professional and scientific series.
- (b) The Standard AID University contract needs substantial revision and considerable more flexibility. Copy of contract proposal prepared by a number of universities is in Mr. Baldwin's office. Research and its integration with training is not adequately provided for. The selection of staff and design of program too often done without adequate consultation with the local University. Furnishing technicians of a high level is emphasized rather than developing a program, and supporting it even though US technicians might not even be sent overseas. The host country university may want persons or advice on different subject matter from technicians in many different universities and in USDA or private research organization. It is possible in the AID contract to select technicians from several places. However, the contracting university tends to use primarily its own staff and former students.
- (c) The fact that this team is in Colombia is evidence that it will not only be hard to get university staff members to do a job which is designed by some one else and which he does not have a hand in planning or cannot modify, but all technicians want to participate in the development phases of the project.

7. Rural Credit and Cooperatives

Supervised Credit

This program is designed to assist low income farmers who do not have a satisfactory or suitable source of credit. It is estimated that approximately 400,000 of the 1,200,000 farm families on Colombia qualify for this type of credit.

A loan of \$10,000,000 has been approved by USAID to enable the Colombian Institute of Agrarian Reform (INCORA) to initiate a program of Supervised Credit. A Supervised Credit Division has been set up in INCORA to administer this program and Sr. Gustavo Restrepo is the head of this division.

With the aid of a consultant in Supervised Credit the procedures and forms necessary to initiate this program have been developed. A training program for personnel who will work in the Supervised Credit program was started in August and 71 persons have now completed this training and are ready to begin writing farm plans and developing loan dockets just as soon as loan funds can be made available.

Following discussions with Director Restrepo, Charles B. Seckinger, Rural Development Officer and Eddie Daniel, Rural Credit Advisor, it is concluded that in initiating the lending program and getting it established on a sound basis technical assistance is needed in four areas: (a) administration, (b) in-service or on-the-job training for supervisors, zone supervisors, and area supervisors, (c) establishing proper and adequate fiscal and accounting systems and procedures, (d) establishing an effective internal audit system.

- (a) Administration - Since neither the Director of the Supervised Credit Division nor any member of this staff has had any actual experience in administering a program of this kind and since this is an entirely new type of program for Colombia assistance is needed by the Director in guiding and directing the program until it is established on a sound and efficient basis. One person with administrative experience in the Farmers Home Administration such as a State FHA Director or program officer is needed on a two-year basis for this assistance. A knowledge of Spanish would be desirable but not mandatory. It is felt that after two years of such assistance the Director of the program and his staff will have sufficient experience to carry on a sound program with only a short term 30 to 60 days assistance in this field each year during the third and fourth years of operation.
- (b) In-Service Training - In administering this program in the field zone offices will be established with a Zone Supervisor in charge. Such a Zone Office will correspond to a county office in FHA. The Zone Supervisor will be assisted by from four to six supervisors under his supervision who will develop most of the farm plans and loan dockets with borrowers. For each five to seven zone offices there will be an area supervisor, supervising the work of these offices. Although the supervisors working at these levels have had several weeks training in the basic principles of Supervised Credit and farm planning under SENA none of them have had actual experience in developing loan

dockets and making supervised loans. Consequently, they will need a large amount of in-service on-the-job training before they can master the techniques and procedures of farm planning and loan making. Two people with good experience as area or district supervisors or a top county supervisor in FHA will be needed on a two-year basis for this assistance. The same technicians will give such assistance as is warranted to SENA in conducting the basic training program. The ability to speak and understand Spanish is mandatory. It is recommended that these technicians work closely with the Colombian area supervisors and it is felt that after two years Colombian area supervisors will be able to carry on such in-service training on a sound basis with assistance from two short term - 60 to 90 days - consultants in this field during the third and fourth years of operation.

- (c) Fiscal and Accounting - Rather than set up a Finance Section within INCORA to handle fiscal and accounting services for servicing supervised credit an agreement is being entered into with the Agricultural Bank (Caja Agraria) and other official banks to furnish these services. The Caja has more than 500 branches throughout Colombia and a branch of this bank or some other official bank will be available at or near every point where a zone office will likely be located.

The fiscal and accounting services required to best serve the Supervised Credit program differ to a great extent from those used in conventional banking. For this reason assistance is needed in helping INCORA and the banks they will use to develop fiscal and accounting procedures that will serve the needs of the program. Such assistance can best be furnished by the National Finance Office of FHA through a short term consultant - approximately 3 months - to develop an adequate system. Ability to speak and understand Spanish would be desirable but not mandatory.

- (d) Internal Audit - In administering a lending program such as that involved in Supervised Credit it is absolutely necessary to have some device or machinery that will assure that the funds which are loaned and used for proper purposes and are handled in such a way that the interest of both the lender and the borrower are always protected. It is also necessary that the policies and procedures which are established for operating the program be followed at all administrative levels. Such an activity can be called an audit, examination, investigation or any other name that describes the sort of work to be done and should be performed by a small group especially trained in this field; who should have access to all operations including the fiscal and accounting records of supervised loans in banks serving the program.

Such a group should be responsible and report directly to the General Manager of INCORA or the Director of the Supervised Credit Division.

Assistance is needed in setting up and training a very small group of people to perform this service. Such assistance could best be furnished by a trained examiner from what was formerly the Internal Audit Division of FHA, now a part of the office of the Inspector General U.S. Department of Agriculture. Such assistance should be given by a short term consultant - approximately 3 months - ability to speak and understand Spanish would be desirable but not mandatory.

The above recommendations will give approximately six and one-half ($6\frac{1}{2}$) man-years of technical assistance during the first two years of the program and one and one-half ($1\frac{1}{2}$) man-years during the second two years. This will result in a total cost of approximately \$89,000 the first year, \$75,000 the second year, \$10,500 the third year and \$10,500 the fourth year.

Cooperatives - No member of the team has specific training in the cooperative field, however, we have considered how cooperatives fit into the Rural Development Sector and it is very evident that cooperatives can play a big part in bringing about a more rapid and sound development of the agricultural economy in Colombia. We have reviewed with the cooperative adviser the assistance now being given by AID and proposed future activities.

The Rural Development Division has underway at the present time a program of assistance to the Colombian Association of Cooperatives which enables that organization to render assistance to its member cooperatives in management and training problems, and similar assistance to new cooperatives being organized. We feel that this kind of assistance is extremely important in enabling the cooperative movement in the country to become established on a sound basis and we strongly recommend that this assistance be continued.

One of the greatest needs in Colombia for developing cooperatives is adequate financing. Efforts are now underway to establish a Bank for Cooperatives which would fill this need if properly established and directed. If a Bank for Cooperatives is established it would in all probability need some external financial assistance and considerable technical assistance until such a bank is well established and operating on a sound basis. The best source of technical assistance would be the Farm Credit Administration through a contract or agreement with its Bank for Cooperatives. This assistance should be in a long-term basis with a technician assigned to this work for at least two years with short term assistance as needed.

With regard to wholesale cooperative being established and the technical assistance needed by this group we feel that the technician in marketing referred to in another section of this report should work with the wholesale cooperative along with other groups and that such assistance would supply most if not all of the need at this time.

With regard to the assistance for cooperative housing which has been proposed this team is making no recommendations, not because we feel this activity is unimportant, but because as proposed it is clearly outside and has no connection with agricultural development.

Recommendations in another section of this report as they apply to assistance in marketing might well be of considerable help in the field of cooperatives, especially, any agricultural marketing cooperatives that already exist or might be established.