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INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT  
INTERNATIONAL DEVELOPMENT ASSOCIATION

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LIVESTOCK DEVELOPMENT PROJECT  
COLOMBIA

April 4, 1966

Projects Department

CURRENCY EQUIVALENTS

1 US dollar = 9 Col. Pesos  
1 Col. Peso = 0.11 US dollar  
1,000,000 Col. Pesos = 111,000 US dollar

C O L O M B I A  
LIVESTOCK DEVELOPMENT PROJECT

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COLOMBIA

LIVESTOCK DEVELOPMENT PROJECT

SUMMARY

- i. The Government of Colombia has requested a Bank loan of US\$ 16.7 million to help finance the first stage of its livestock development program which aims at the improvement of the beef cattle, dairy cattle and sheep industry. The Colombian agriculture has great potentials, both in productivity and in developing hitherto unused lands for the production of beef, milk and wool. There is at the same time a pressing need for the increase of livestock production to cover growing domestic and export demands.
- ii. Because there is little experience in Colombia of public financing of long-term livestock development, a pilot type of approach would be used at this stage, confining the project to specific regions. These regions have been selected for the highest land potential, and the availability of suitable markets.
- iii. The project is directed mainly at on-farm improvements such as land clearance, fencing, water supplies, stock handling facilities and the improvement of pastures and breeding stock. These improvements would raise both output and efficiency of production.
- iv. It is expected that about 900 beef cattle ranches, 250 dairy farms and 35 sheep farms would participate in the project. In all cases long-term development credit to farmers of up to twelve years is envisaged. Investment in each sector would be spread over three years.
- v. The organization and administration of the project would be carried out by the Caja de Credito Agrario Industrial y Minero (Caja). A special livestock development department headed by a Technical Director with a small staff of experts would be set up for this purpose within the Caja. This department would be responsible for assisting farmers in preparing individual development plans, for recommending these to the Caja for lending and for supervising the execution of plans for which loans are made. Financially and administratively the Caja would process these loans in the normal way through its regional offices which are well equipped to do so.
- vi. The project is estimated to cost a total of about US\$ 28 million of which US\$ 25 million or about 90 per cent would be for farm development. Costs for contractors machinery, cooperative dairy equipment and technical services count for the balance of US\$ 3 million or about 10 per cent. The Bank loan would cover 60 per cent of the total project cost. The balance would be provided by the Caja (22 per cent), participating farmers and dairy cooperatives (18 per cent).

vii. The project is technically sound and economically justified. The administrative arrangements would be satisfactory. Estimated benefits to both participating farmers and the national economy are substantial. The project is suitable for a Bank loan of US\$ 16.7 million, repayable over an 18-year term, including a 6-year grace period. The borrower would be the Government of Colombia and the Caja would administer the loan.

## COLOMBIA

### LIVESTOCK DEVELOPMENT PROJECT

#### I. INTRODUCTION

1. The Government of Colombia has applied for a Bank loan of US\$ 16.7 million to help finance the first stage of its livestock development program which aims at the improvement of the Colombian beef cattle, dairy cattle and sheep industry. A joint Bank/FAO mission which visited Colombia in March/April 1965 accordingly prepared a three-year development project. This appraisal report is based on the findings of a mission which visited Colombia in October/November 1965. The mission was composed of Messrs. W. Schaefer-Kehnert, A. Favilla, R. Henderson (Bank) and P. Brumby (FAO).

#### II. BACKGROUND

2. Colombia with an area of 1.14 million square kilometers is the fourth largest country in Latin America. It is predominantly an agricultural country and likely to remain so in the foreseeable future. About 50 per cent of its present population of about 15.4 million is rural, and a substantial part of the non-rural population is engaged in servicing the agricultural industry. Of the G.D.P. about 32 per cent is contributed by agriculture. Livestock output represents one-third of agricultural production.

3. Although falling wholly within the tropics Colombia has great variations in climate. Three ranges of the Andes running approximately south-north, with related differences in soils, cause a veritable mosaic pattern of ecological zones. These comprise mainly cool, humid tundras, temperate humid grasslands, savannahs, and tropical rain forests.

4. Thanks to these conditions, Colombia produces a wide variety of crops as well as livestock products. The dominant crop is coffee which accounts for one fourth of agricultural production and almost 70 per cent of total exports. In view of the world coffee situation, there is a great need for further diversification in Colombian agricultural production.

5. Vast areas suited to grazing are being used partly, or at low levels of intensity, while there is a pressing need for the increase of production of beef, milk and wool to cover growing domestic and export demands.

6. Population growth, estimated at about 3.2 per cent per annum and increasing per capita incomes are likely to raise local demand for livestock products. Current consumption is low at 23 kg of beef and 72 liters of milk per capita per annum. Eight thousand tons of fine wool have to be imported per annum. This situation, along with an export potential for beef, focuses attention upon the need to increase the production of the livestock industry.

7. Over the past years the greater portion of foreign capital has been invested in infra-structure and industry rather than agriculture. Of US\$ 390 million Bank loans only US\$ 10 million have been for short-term financing of imported agricultural machinery. Internally generated finance from the cattle owners and other private capital is directed to the short-term financing of cattle purchases for fattening or finishing on 9 to 12 month terms. Apart from a US AID loan of US\$ 4 million devoted to beef cattle development for small or medium-sized farms, long-term credit hardly exists.

#### Beef Cattle

8. Although statistical data are insufficient it is likely that Colombia supports about 17.5 million head of cattle. Of these about 15 million are beef animals; about 7 million are carried in the La Costa Zone (Departments of Atlantico, Bolivar, Cordoba and Magdalena); about 2 million in Los Llanos (Departments of Boyaca, Meta and the Intendencia of Arauca) and 6 million in the rest of the country especially the Departments of Antioquia, Caldas and Cauca (see Map 1). It is estimated that beef cattle numbers have increased by about 3.5 per cent per annum over the past five years.

9. According to official data some 2 million head of cattle were slaughtered in 1964. To this must be added about 120 thousand head for on-farm consumption and 220 thousand head for export of slaughter cattle to Venezuela and Ecuador. These figures indicate an annual take-off of about 13 per cent. This low take-off figure is a direct measure of the potential of increased efficiency as developed beef cattle industries have take-off figures of 25 per cent or better.

10. The main factors for increased efficiency and production in the beef industry are clear cut and can be expressed in the terms of better general animal husbandry with emphasis on pasture improvement and management, fencing, calf rearing and parasite control. Progress will be expressed in higher calving rates, higher take-off percentages and carcas yields. A rise in cattle numbers will help to stock the areas awaiting exploitation.

11. A regional approach is indicated by Colombia's topography which has led to regional administration and marketing organizations. La Costa with nearly half the total beef animals is the key producing area.

In addition, it has more than 2 million hectares of land presently uncleared which are capable of being converted to pastures while the existing 1.7 million hectares of native pasture could be considerably improved. Because of its location it is also the logical export center.

12. Los Llanos is a huge area of natural grassland which is only carrying 2 million head on about 20 million hectares at present. Stocking rates on existing farms are well below capacity. As La Costa moves into production for export the contribution of Los Llanos as a supplier to the Bogota and other local markets must increase. The development of Los Llanos is also logical to permit other departments as Antioquia, Caldas and Valle, more suited to high value cash crop production, to move out of beef production without harm to the national meat supply.

#### Dairy Cattle

13. Dairy cattle statistics also involve an element of estimation. About 3.5 million head (including many beef cows) are likely to contribute to milk production, which is estimated at some 2.0 million tons of milk annually, indicating a relatively low yield per cow of about 600 kilos per year. About 35 per cent of total consumption is in the form of cheese, and 15 per cent is butter. Milk for direct consumption is concentrated near the main areas of consumption at Bogota and other large towns.

14. There are no technical barriers to considerable increases in milk production. Alternative use of land for high value cash crops is decreasing dairying areas to some extent, but undeveloped areas can more than compensate for this. Rather, development is retarded by inadequate management, mainly calf rearing, fencing, pasture management and supplemental feeding, coupled with the lack of long-term development credit.

15. In view of the growing competition for land for other uses near the principal centers of demand, there is a growing need for the development of a low cost dairy industry in one of the temperate zone areas capable of supplying the major centers with dairy products from longer distances. One such area is located in the departments of Narino and southern Cauca, where some 30,000 hectares are especially suitable for dairy production.

16. The need for more milk, powdered milk and other dairy products should also encourage development in La Costa, where sound dairy manufacturing is already established and capable of rapid expansion, and where a definite demand exists.

#### Sheep

17. The sheep population is estimated at about 1.1 million and coarse wool production at about one thousand metric tons of greasy wool per annum. Half of the wool is absorbed by the local manufacturing



industry and the remainder used in cottage industries. Eight thousand tons of fine wools are imported annually, mainly from Uruguay and Argentina.

18. The majority of Colombian sheep are Criollo (native), with a coarse fleece and a low yield. They are kept by peasant farmers in small flocks of about 20 head at a primitive level with little or no use of normal practices such as castration, docking, drenching, and controlled breeding. There is a high mortality among the lambs, in which internal parasites play a large part.

19. This peasant industry, which is important economically to a large number of small farmers, could be improved by education in better smallholder sheep management to give an increased production of coarse wool. On the other hand, there are about 2 million hectares of land currently underused, which could be exploited for the large-scale, large flock production of commercial fine wool on modern lines to replace wool imports. A start, although a small one, has been made by some farmers with large-scale, direct importations of Corridale sheep. These flocks, although relatively new and variable in quantity, are sufficiently successful to point the way to the establishment of a fine wool industry.

#### Government Policies and Agricultural Services

20. The Government of Colombia recognizes the need for developing the livestock industry of the country. It has drawn up a long-term livestock development program which was the working basis for the joint Bank/FAO project preparation mission and the appraisal mission. These missions have modified the technical details of the program in agreement with the Planning Department and other government agencies concerned and have formulated the first three year stage of the program as a project suitable for foreign financing. Although cost estimates for a nine year investment program (three stages of three years each) have already been made by the Planning Department, totaling US\$ 66 million, details for the future stages have not yet been worked out and will certainly require further planning work when more experience has been gained during the first stage of the program.

21. Government plans in connection with the livestock development program include the strengthening of animal health services. Although the animal health situation is better than in most other Latin American countries improvement of the services will be required when the program gets underway. An animal health plan including the establishment of an animal health institute is being prepared for this purpose.

22. The overall situation of agricultural services in Colombia is rather unsatisfactory because of the large number of agencies involved. More than 10 different institutions provide extension services to the farmer including private banks and farmers associations. This leads to an overlapping of efforts in some fields and a complete lack of available services in others. To improve the situation the government is considering a major reorganization of the agricultural institutional set-up for which plans have been worked out by the Planning Department. In the livestock sector where only fragmentary advisory services are available at present, a special technical assistance group is being set up in connection with the livestock development program.

#### Farmers' Demand for Livestock Development

23. Most of the commercial farmers are aware of the opportunities of livestock development, particularly in view of the relatively favorable price situation for livestock products in Colombia. To assist the Government in the preparation and implementation of the livestock development program a National Federation of Livestock Producers has recently been formed in which regional farmers associations, cooperatives and industrial organizations with interests in the livestock field are represented. This federation as well as other organizations have repeatedly indicated the farmers' interest in livestock development and the pressing need for long-term development credit.

### III. THE PROJECT

#### A. General Description

24. The project is the first stage of a long-term livestock development program. It proposes investments in the three main sectors of the livestock industry: beef cattle, dairy cattle and sheep. Because there is little experience in Colombia of public financing of this type of development, a pilot type of approach would be used at this stage, confining the project to specific regions. These regions have been selected for the highest land potential and the availability of suitable markets.

25. The project is directed mainly at improvements of existing farms to raise both output and efficiency of production. In addition, limited development of new lands of high potential is planned, while in special circumstances provision is made for the financing of livestock where these are vital to development (para 28). In all cases long-term development credit to farmers for up to twelve years is envisaged. Investment in each sector would be spread over three years.

26. Loans to individual farmers would be made through the Caja de Credito Agrario, Industrial y Minero (the "Caja", as described in Annex 1) for approved farm development plans, designed and prepared by qualified extension workers headed by a Technical Director with a small staff of experts. Since improved, or even new methods of production would be involved, the execution of individual farm development plans would require close technical supervision. To meet these requirements the project would provide funds for strengthening the technical supervisory services of the Caja.

## B. Detailed Features

### Beef Cattle

27. Investments in the beef sector would be confined mainly to the Departments of Atlantico, Bolivar, Cordoba and Magdalena on the Atlantic coast (La Costa); and the Departments of Boyaca (part), Meta, and the Intendencia Arauca in the zone of Los Llanos (see Map 1). The Departments of La Costa would absorb about 80 per cent of the proposed investment, and those of Los Llanos the remainder. The Project would cover about 800 farms in La Costa, and 90 in Los Llanos and would be directed toward commercial farms. Such farms would inevitably tend to be medium to large but small farms would not be excluded if they are handled on a commercial basis. Small and medium-sized farms of a less commercial character have already available to them development funds provided by a US AID loan (para 7).

28. Provision would be made in La Costa for the financing of fencing, watering and handling facilities, farm buildings, farm machinery for the establishment and management of pastures, land clearance and drainage, for imported pure bred males, females and semen and for locally bred bulls. In Los Llanos, land clearance would not be justified but provision would be made for financing the purchase of commercial female breeding cattle from other areas of Colombia. The project would also finance equipment for intensified health control measures in the herds of participating farmers.

29. Heavy machinery for the building of dams and boring of wells on smaller properties would be provided through loans to contractors servicing these farms. The larger ranches may be provided with individual equipment but in such cases arrangements would be made for these to carry out limited contracting on behalf of adjacent smaller properties.

30. The combined effect of the proposed investments is expected to be reflected in an increased beef output of up to 100 per cent over the twelve years necessary for full development for the participants. This level of increase would be reached by an improvement of 25 per cent in the calving rate, a reduction from 3 to 2 per cent in the mortality

rate, and a reduction in the age at which steers are ready for market from four years to three. These factors combining together would give an increase in "take-off" percentage from the present 12-14 per cent to 16-20 per cent. In addition total cattle stocks in the farms concerned would increase by 4 to 5 per cent per year.

### Dairy Cattle

31. Investment in dairy production would be limited to pilot operations in the Department of Narino (including southern part of Cauca) and the area round Barranquilla in La Costa (see Map 1). These investments would cover on-farm development costs on about 150 farms in Narino and on about 100 farms in the Barranquilla area. They would provide for fencing, water and handling facilities, simple milking sheds and farm buildings; grassland machinery, fertilizers and seeds; establishment and management of permanent pastures, along with dairy male and female stock of improved breeds and semen. At this pilot stage, investments in the area of Narino would not provide for milk processing factories, which would be needed later when the expected production gains in milk yield are obtained. At Barranquilla, where existing processing capacities are insufficient, loans to dairy cooperatives would be provided to purchase dairy manufacturing equipment for the production of bottled and powdered milk. At Narino, the emphasis would be on pasture improvement and breed improvements by artificial insemination with imported semen.

32. Production gains per farm are estimated at about 400 per cent in Narino and 450 per cent in Barranquilla. The increase in production would be absorbed by the existing unsatisfied liquid milk demand in both areas, and by the manufacture of powdered milk, butter and cheese.

### Sheep

33. Investments in sheep would include on-farm development costs for fencing, sheep sheds and yards, watering points, pasture improvement up to 150 hectares per farm, and the importation of sheep flocks averaging 500 breeding ewes and 15 rams per farm. Such sheep are expected to be available in sufficient numbers and quality from several countries. The program would extend over all suitable areas of the highlands which are found in selected parts of the Departments of Santander, Boyaca, Cundinamarca, Narino, Cauca, Valle, Huila, Tolima, Caldas, and Antioquia (see Map 2).

34. The project is essentially a pilot one and would involve only 35 farms over a three-year period. These farms would average at least 1,000 hectares in size, and eventually carry up to 1,500 breeding ewes plus followers. After full development of twelve years, annual production would be 12,000 kilograms of high quality wool per farm. In addition, rams and surplus ewes of about 20,000 head would thereafter become available annually from the project for disposal to other farms.

C. Cost Estimates

35. The estimated investment cost of the project is equivalent to US\$ 28 million and is summarized in the following table:

	Beef Cattle	Dairy Cattle	Sheep	Total	Foreign Exchange Component
	US\$ '000 equivalent				
Farm Development					
Land clearance	1,780	280	-	2,060	210
Pasture improvements <u>1/</u>	4,600	2,580	340	7,520	750
Fencing	2,280	560	210	3,050	760
Water supplies	2,970	500	60	3,530	1,760
Farm machinery	1,310	1,110	20	2,440	2,440
Farm buildings and equipment <u>2/</u>	820	440	40	1,300	130
Breeding stock <u>3/</u>	<u>3,330</u>	<u>930</u>	<u>840</u>	<u>5,100</u>	<u>1,350</u>
Total Farm Development	17,090	6,400	1,510	25,000	7,400
Contractors' Machinery	1,000	-	-	1,000	1,000
Dairy Cooperatives <u>4/</u>	-	660	-	660	320
Technical Services	<u>750</u>	<u>300</u>	<u>290</u>	<u>1,340</u>	<u>380</u>
Total Project Cost	18,840	7,360	1,800	28,000	9,100
Per cent distribution	67 %	26 %	7 %	100 %	33 %

1/ Including fodder crops, silage trenches and miscellaneous.

2/ Including stock yards and artificial insemination equipment.

3/ Including semen.

4/ Expansion of dairy plants and investment costs of artificial insemination services.

36. The foreign exchange cost totaling US\$ 9.1 million or 33 per cent of the total investment cost has been calculated in US dollars. Local cost have been estimated in Colombian pesos and expressed in US dollars at the rate of 9 to 1 as this rate still was reflected in the price situation of the agricultural sector at the time of appraisal. The recent devaluation of the peso to 13.5 to 1 of course, has the effect of reducing the domestic component of cost and, therefore, of reducing the total investment cost expressed in US dollars. This will take place to the degree in which local costs would not adjust to the new exchange rate. The major factor in local costs is the agricultural wage rate which was 9 pesos per man day, equivalent to US\$ 1 at the time of appraisal. Under the new exchange rate the dollar equivalent of the wage rate would be reduced to 0.67 if its peso cost would remain unchanged. However, wages in other sectors were increased in the year prior to the devaluation and it is to be expected that agricultural wages will be adjusted in due course to maintain their purchasing power. Taking this into account, together with an allowance for contingencies it seems safer to assume that the investment cost expressed in US dollars will not be reduced.

37. Farm development costs aggregate US\$ 25 million or about 90 per cent of the estimated total project costs. Costs for contractors' machinery, cooperative dairy equipment and technical services count for the balance of US\$ 3 million or about 10 per cent. All costs, except for technical services are capital costs.

38. Estimates for farm development costs are based on representative farm development plans for each of the project areas: beef cattle in La Costa and Los Llanos, dairy cattle in Narino and Barranquilla and sheep in the temperate highlands. Details are given in Annexes 2 - 6. The basic assumption is that the following number of farm development plans could be prepared and approved over a three-year period:

<u>Project</u>	<u>Area</u>	<u>Number of farm plans</u>
Beef cattle	La Costa	800
Beef cattle	Los Llanos	90
Dairy cattle	Narino	150
Dairy cattle	Barranquilla	100
Sheep	General	35
	Total	1,175

39. Cost estimates for contractors' machinery (US\$ 1 million) are based on the estimated requirements for land clearing, dam building and well boring. Provision has also been made for the cost of expanding two cooperative dairy plants (US\$ 600,000) in the Barranquilla area which would process the milk produced under this section of the project. In addition, US\$ 60,000 would be required for setting up an artificial insemination service in this area.

40. The costs of technical services (US\$ 1.34 million) to be provided by the Caja have been calculated for a three-year full employment period. They cover the local currency costs (US\$ 960,000) and foreign exchange requirements (US\$ 380,000) of salaries, vehicles and staff transport costs. Details are given in Annexes 2 - 6.

#### D. Proposed Financing

41. The investment cost of the project, US\$ 28 million equivalent, would be financed as follows:

	<u>Bank Loan</u>	<u>Caja's Contribution</u>	<u>Farmers and Cooperatives</u>	<u>Total</u>
		(US\$ '000 Equivalent)		
Farm development	15,000	5,000	5,000	25,000
Contractors' machinery	1,000	-	-	1,000
Dairy cooperatives	320	140	200	660
Technical services	380	960	-	1,340
	<hr/>	<hr/>	<hr/>	<hr/>
Total	16,700	6,100	5,200	28,000
Per cent distribution	60%	22%	18%	100%

42. For farm development the owner would provide in cash, labor or materials 20 per cent of the estimated costs. The other 80 per cent of the cost would be advanced to the farmer as a loan from the Caja at 12 per cent interest and with a term of about 10 years including a grace period of 4 years for beef and dairy farmers. For the sheep farmers the term would be extended to 12 years with a grace period of 6 years to allow for the slower return from this type of development. The Caja would obtain 75 per cent of its relevant funds (60 per cent of the total farm development cost) from the proposed Bank loan and would contribute the balance of 25 per cent (20 per cent of the total cost) from its own financial resources. Short-term credits required for complementing development loans would be provided by the Caja if such credits would not be available from other sources.

43. For the import of heavy machinery loans would be made to contractors at a shorter term of about 3 years at 12 per cent interest. All funds required for this purpose (US\$ 1 million) would be provided by the Bank loan. The type of machinery required is not manufactured in Colombia.

44. For the cost of expanding cooperative dairy plants and the establishment of an artificial insemination service the dairy cooperatives in the Barranquilla area would obtain loans from the Caja at 12 per cent interest at a term of 7 to 10 years totaling US\$ 460,000. The foreign exchange component of these loans (US\$ 320,000) would be provided by the proposed Bank loan. The cost of land and construction (US\$ 200,000) would be contributed by the cooperatives from their own resources.

45. For the cost of technical services the foreign exchange portion (US\$ 380,000) would be provided by the Bank loan. This portion includes salaries and passages of 4 foreign livestock experts to be employed under the project (para 52) plus the purchase of vehicles.

46. The Bank loan of US\$ 16.7 million would be made to the Government of Colombia which would carry the exchange risk. Proceeds of the loan for expenditures in pesos would then be made available to the Caja by the Government. The Caja will make the repayment to the Government in pesos and the Government in turn will service the debt to the Bank in foreign currency. To cover a part of the exchange risk the Government will charge 2 per cent per annum on the loan amount outstanding in addition to the Bank's interest rate.

47. Suggested terms of the Bank loan to the Government take account of the repayments by the project farmers to the Caja. Assuming prompt repayment by farmers, loans disbursed in the last year of the four-year disbursement period would be fully repaid in the fifteenth year of the Bank loan. However, in order to provide a margin for setbacks or delays, it is proposed that repayment terms of the Bank loan should be 18 years including 6 years of grace.

#### E. Disbursements

48. Disbursements of the Bank loan for farm development would be for 75 per cent of loans made by the Caja for this purpose (para 42). For the cost of contractors' machinery, dairy manufacturing equipment and technical services disbursements would be made against appropriate documentation of the foreign exchange cost. The total disbursement period of the project would extend over about four years. Within this framework each individual farm development loan would normally be disbursed in two annual installments. The Caja would establish and maintain separate accounts for the livestock development project. These accounts would be audited semi-annually by an accountant acceptable to the Bank.



#### F. Operating Results

49. The expected financial implications for the Caja resulting from the livestock development project are set forth in Annex 7. According to this projection the project could be financially self-liquidating over a period of 15 years. The proceeds from loan repayments on principal and interest by farmers would cover all obligations for the Bank loan debt service. The Caja would also recover with interest its own contribution of \$ 6.1 million over the suggested repayment period of the Bank loan. Cash surpluses accruing during an intermediate period would be relented to farmers at long and medium terms for the purpose of the livestock development program.

#### IV. ORGANIZATION AND MANAGEMENT

##### General

50. The organization and administration of the program of financial and technical assistance to livestock producers would be carried out by the Caja. As indicated in Annex 1, the Caja is an experienced agricultural credit institution. Currently it provides nearly 60 per cent of all agricultural lending in Colombia. Operating since 1931 it has a good record of performance in respect to both the volume and variety of farm lending. The Government is the largest shareholder and provides continuing capital support. The Caja has successfully utilized two previous IBRD loans for agricultural machinery. Of a total loan portfolio in 1964 of nearly Col. Pesos 2 billion, 90 per cent was for agriculture of which 52 per cent was for the livestock sector. Thirty per cent of all agricultural loans were for terms longer than 5 years, the majority of the remainder were for 1 year. The proposed Bank loan and the Caja's contribution to the project would increase the loan portfolio by approximately 15 per cent.

51. The Caja is well organized for handling agricultural lending operations. Although the bulk of its loans have been short term it has some experience in longer term development financing for medium-sized farms as exemplified by its successful dairy development program at Marino. The continuance of this program would be incorporated with only some minor modifications in the Bank project. The Caja is especially interested in extending its experience and its technical staff via the Bank loan in this type of operation.

##### Technical Services and Loan Processing

52. Technical services will be provided by setting up a special livestock development department within the Caja staffed by a technical director and three regional chief technicians recruited overseas, plus

the regrouping of existing personnel under an administrative director of the Caja. The organization chart of the project and the technical staff required are shown in Annex 8. The Caja would appoint a technical director and three chief technicians, satisfactory to the Bank prior to the effective date of the loan.

53. This livestock development department would be responsible for assisting farmers in preparing individual development plans, for recommending these to the Caja for lending and for supervising the execution of plans for which loans are made. The Caja would make development loans under the project only with the approval of the technical department referred to. Financially and administratively the Caja would process these loans in the normal way through its regional offices which are well equipped to do so.

54. Loans to machinery contractors (para 29) and dairy cooperatives (para 31) would be based on the number and capacity of machinery and technical installations required for the project and would be made only with the approval of the livestock development department of the Caja. These different categories of loans would have varying terms and conditions within the specified general terms (paras 42, 43 and 44), depending on the composition of individual investment plans.

#### Procurement

55. Goods required for farm development would be procured through existing commercial channels. There is a great number of foreign firms represented in Colombia competing in the local market. The Caja assists these firms in procuring and financing their import requirements especially the import of agricultural machinery. The Caja also has its own stores, through which it supplies mainly small farmers with their small scale input needs on a non-profit basis. In addition, the Caja operates a special seed production unit which would be able to supply the tropical pastures legumes vital to the pasture improvement sections of the project. Importation and distribution of fertilizers, livestock and semen are also all normal activities of the Caja which will easily be applied to the project. All purchases of livestock required for the project would be subject to the approval of the livestock development department with respect to the quality and origin of such stock.

Marketing

56. The commodities produced by the project would be marketed through existing commercial channels including dairy manufacturing cooperatives. These might not be considered to be efficient when compared with more developed countries but are probably sufficient for Colombia at the present time. The Government maintains a consumer price control system for beef and milk but only in the larger towns and organized markets. In practice this control tends to follow market tendencies and does not have a restrictive influence.

57. Most of the beef is slaughtered in small abattoirs with the cattle being killed at night for delivery next day to the market as raw meat. A few modern slaughter houses exist with freezing chambers from which the small export trade is supplied. When an increase in export is experienced as a result of the project, expansion of these facilities will be required, but not before the later stages of the program.

58. The marketing of dairy products is either in the hands of small middlemen or dairy manufacturing companies and cooperatives. The latter produce the best qualities of liquid milk, butter and cheese and all of the powdered milk. There is general shortage of all products in the larger population centers which is reflected in good prices to the producer and a relatively high price for powdered milk as compared with the liquid form. The increase of production resulting from the project will easily be absorbed by this demand.

59. The production of fine wool resulting from the project will be readily absorbed by the textile manufacturing industry which at present imports all its fine wool requirements (para 17).

V. BENEFITS AND JUSTIFICATION

60. The benefits to participating farmers from investments to be made under the project are analyzed in Annexes 9 - 13. The estimates are based on typical farms for the areas and types of projects concerned. Expected results per farm at various stages of development can be summarized as follows:

	Before Development	After 5 years of Development <sup>1/</sup>	When development <sup>2/</sup> is completed	Per cent increase <sup>3/</sup>
<u>Beef cattle, La Costa</u>				
(Investment cost: Pesos 158,000 per farm)				
Total stock, No.	1,180	1,560	1,800	52
Sales per year, No.	168	230	339	102
Net income, Pesos '000 per year	166	205	361	117
<u>Beef cattle, Los Llanos</u>				
(Investment cost: Pesos 303,500 per farm)				
Total stock, No.	1,110	1,590	1,850	66
Sales per year, No.	152	248	285	88
Net income, Pesos '000 per year	133	164	264	99
<u>Dairy cattle, Narino</u>				
(Investment cost: Pesos 202,650 per farm)				
Number of cows	30	55	60	100
Milk sales, tons per year	36	146	180	400
Net income, Pesos '000 per year	25	49	126	404
<u>Dairy cattle, Barranquilla</u>				
(Investment cost: Pesos 271,400 per farm)				
Number of cows	100	161	200	100
Milk sales, tons per year	90	290	500	456
Net income, Pesos '000 per year	99	245	638	540
<u>Sheep</u>				
(Investment cost: Pesos 387,000 per farm)				
Total stock, No.	-	2,500	4,640	-
Wool sales, kg per year	-	5,670	12,090	-
Net income, Pesos '000 per year	-	42	231	-

<sup>1/</sup> Net income figures at this stage are after debt service.

<sup>2/</sup> After 12 years on beef cattle and dairy farms and 14 years on sheep farms (farm development loans would have been paid back at this stage).

<sup>3/</sup> When development is completed as compared with figures before development.

61. As these projections show, the net income per beef cattle and dairy farm would increase by 100 to 540 per cent over the 12-year development period of an individual farm plan. At the same time stock numbers would increase by 50 to 100 per cent. The sheep farms starting from zero would also show a considerable net income and a large increase of productivity from hitherto almost unused land.

62. The increase of annual production derived from the completed project (after 14 years of development) would amount to about 58,000 tons of beef (liveweight); 63,000 tons of milk or its equivalent in milk products and 400 tons of fine wool. The gross value of this production would total about US\$ 32 million per year at prices paid to producers. Assuming that 50 per cent of the increase of beef production would be exported and that all fine wool produced would be an import substitution the project's contribution to the foreign exchange earnings of Colombia would be substantial. Deducting the foreign exchange component of the production costs and debt service the net increase of foreign exchange earnings would average about US\$ 10 million per annum after completion of the development period.

63. The cash flows of the estimated incremental costs, including the US\$ 28 million investment cost and of the estimated revenues from incremental sales are summarized in Annex 14. For these calculations, it has been assumed that the lifetime of individual farm development plans would average 20 years and that all investments other than live-stock would have no residual value at the end of this period. Costs and prices used in the first part of these calculations are those prevailing at the time of appraisal when the exchange rate was 9 to 1 (Assumption A). As an alternative it has been assumed that the foreign exchange component of the investment cost, expressed in Colombian pesos, would increase by 50 per cent according to the new exchange rate of 13.5 to 1 and that domestic costs and product prices (in pesos) would remain unchanged (Assumption B). Under these two different assumptions the three sections of the project would yield the following average annual net returns to the economy of Colombia: 1/

	<u>Assumption A</u>	<u>Assumption B</u>
Beef cattle	40 %	36 %
Dairy cattle	35 %	32 %
Sheep	23 %	20 %

64. These calculations do not take into consideration other more intangible benefits to the livestock industry as a whole. In particular the project would provide an important source of high producing beef and dairy breeding stock and would introduce modern production techniques such as the use of tropical and subtropical pasture legumes. The project's technical service will assist in developing standards in a wider sphere than the project alone, particularly for the future expansion of the industry. Finally the sheep section would establish the basis for a new livestock industry complementary to the present peasant sheep production and with great prospects of expansion.

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1/ Based on the discounted cost flow method.

## VI. CONCLUSIONS AND RECOMMENDATIONS

65. The project, which is the first stage of a long-term livestock development program is technically and economically sound. The Caja with the staff additions recommended would be capable to administer the project. It has sufficient financial resources to provide the necessary funds. The demand for such development is great and farmers are highly interested in participating.

66. The project is suitable for a Bank loan of US\$ 16.7 million. The borrower would be the Government of Colombia and the Caja would administer the loan. An appropriate term would be 18 years, including a grace period of 6 years. The Bank loan would be equivalent to about 60 per cent of the total project cost.

67. During negotiations, assurances were obtained that:

- a) the Government of Colombia in making the Bank loan available to the Caja would not charge more than two per cent as coverage for the foreign exchange risk. This, when added to the Bank's interest rate would be the only amount charged to the Caja for the proceeds of the Bank loan (para 46).
- b) The Caja would:
  - (i) make available for lending to farmers promptly as necessary local currency funds equaling 25 per cent of approved farm development loans (para 42).
  - (ii) provide funds for short-term credit if such financing would be required for complementing development loans (para 42).
  - (iii) use the proceeds of payments which it receives on account of loans granted under the project and which are not currently required to service the Bank loan for the purpose of the livestock development program (para 49).
  - (iv) appoint a technical director and three chief technicians satisfactory to the Bank prior to the effective date of the loan (para 52).
  - (v) follow the terms and conditions of the different categories of loans to be made to farmers, machinery contractors and dairy cooperatives, as agreed to with the Bank (para 54).
  - (vi) ~~make~~ all purchases of livestock required for the project subject to the approval of the livestock development department with respect to the quality and origin of such stock. (para 55)

CAJA DE CREDITO AGRARIO INDUSTRIAL Y MINERO

A. Introduction

1. The Caja was created by law in 1931 as a joint stock company. It is a semi-official entity; probably one of the largest credit institutions in Latin America. It is essentially engaged in lending to agriculture, but it also provides credit to industry and small miners. About 57 per cent of total agricultural lending in Colombia is financed by the Caja; 90 per cent of its loans are for agriculture (52 per cent for livestock). Without any doubt, over its many years of operations, the Caja has served the farmer giving him preferential consideration in an endeavor to raise his standard of living.

B. Organization and Management

2. The Caja's governing body is a Board of Directors; it is made up of the Ministers of Finance and Agriculture, a representative of the President of the Republic and one delegate from each of the National Coffee Growers Federation and of the National Farmers' Association. Next in line is the General Manager, who is assisted by five committees, on coordination, finance and commerce, credit, development and administration. The General Manager and the Committee members are appointed by the Board. These committees are staffed with specialists in each field.

3. The central office enforces its policy through regional offices. There are 600 regional offices (branches and agencies) covering the most remote areas of the country. The branches are located in the capital of each "Departamento" (administrative provincial sub-division). They have a manager who is responsible for the credit operations within his area and who has authority to grant loans for up to a specific amount, determined on the basis of the importance of the locality. The branches have a consultation Board, formed by members appointed by the Board of Directors, from a list of candidates submitted by a local Farmers' Association of each "Departamento". These Boards pass on credits in amounts exceeding the limit set forth under the regulations applicable to each manager.

4. In addition to the branches, there are credit agencies located in every municipality. These agencies range in size and volume of operations, depending on the area they cover. Each agency has specific credit authority, commensurate to its type, and has a manager. The agencies also have an Advisory Board, formed in the same way as the Branch Boards. These Boards in the same way as applicable to the branches, assist the agency manager in his credit policies and have authority to grant loans for specific amounts depending on the type of agency.

5. The upper limit of loans which can be approved at the branch-agency level varies from Col. \$ 15,000 to 300,000 and is largely determined, as it was mentioned, by their category.

C. Resources of the Caja

6. The Caja has an authorized share capital of Col.\$ 600 millions (60,000 shares with a par value of Col.\$ 10,000 each), with Col.\$ 478 million paid in as of June 30, 1965, owned as follows:

	<u>Col.\$ '000</u>	<u>Percentage Composition</u>
National Government	388,630	81.1
Coffee Growers Fed.	61,935	13.0
Agricultural Mortgage Bank	21,003	4.4
Stabilization Fund	6,876	1.4
Private Sector	21	0.1
	<hr/>	<hr/>
Total	478,465	100.0

In addition, the Caja had about Col.\$ 40 million in legal reserves and about Col.\$ 80 million in other reserve provisions. It does not pay dividends but reinvests most of its profits which were Col.\$ 15 million in 1964.

7. The Caja enjoys exceptional rediscount facilities with the Central Bank. Its rediscount quota was increased from Col.\$ 750 million to Col.\$ 845 million in June 1965. This is equivalent to 172 per cent of its paid-in capital and legal reserves versus 45 per cent authorized to commercial banks. Seventy per cent of the Caja's rediscount quota are for short and medium-term credit (up to five years), and 30 per cent for long-term credit. The rediscount rate paid by the Caja to the Central Bank is two per cent compared to four per cent charged to commercial banks for loans of developmental nature.

8. Demand deposits amounted on June 30, 1965, to Col.\$ 388 million. Of these funds, 60 per cent can be used by the Caja; the rest (40 per cent) are earmarked for reserve requirements and for purchases of securities of the Central Mortgage Bank.

9. The Caja Colombiana de Ahorros (Colombian Saving Bank) was consolidated with the Caja in 1955. On June 30, 1965 there were savings deposits totaling Col.\$ 675 million, representing 60 per cent of all savings deposits in the country. The interest paid in these deposits is from four to five per cent. The use of 80 per cent of these funds is regulated by law; they must be invested into government and other official bond issues, rural housing and purchases of land for resettlement.

10. At present, the Caja has issued bonds amounting to Col.\$ 329 million, Col.\$ 219 million are held by the Central Bank, Col.\$ 107 million by the commercial banks and Col.\$ 3 million by other private institutions. The interest paid on these bonds is from two to four per cent and subscription by commercial banks is imposed either as a liquidity measure (five per cent of their demand deposits) or as a penalty in case they have not complied with Law 26, which prescribes that they must invest 15 per cent of their deposits in agriculture.



11. The Caja has received six external loans including two from the IBRD (fully repaid) since its creation. Only one recently granted US\$ 2.5 million from the Exim Bank for agricultural machinery is outstanding. In addition, it is the administrator of Pl 480 counterpart funds. The Caja has benefited from four U.S. loans of counterpart funds for a total of about Col.\$ 187 million. Of this total Col.\$ 181 million have been relent by the Caja, generally to small farmers. In 1963 the Government of Colombia decided to assume the repayment of the Col.\$ 181 instead of the Caja thus increasing its capital subscription by that much.

#### D. Activities and Lending Operations

12. The Caja not only provides credit to agriculture, but it assists farmers in obtaining agricultural machinery and sells a wide variety of products needed by them. Its total portfolio increased from Col.\$ 811 million in December 1960 to Col.\$ 1,944 million in December 1964, an average annual increase of 34 per cent. In June 1965 the portfolio amounted to only Col.\$ 1,945 reflecting current credit restrictions. Almost 52 per cent of the Caja credit as of December 1964 was for livestock; 39 per cent for cattle and the rest for pastures, farm improvements and purchase of farms.

13. As of December 31, 1964 (last available data with detailed analysis) there were about 400,000 loans outstanding, which for a total amount of Col.\$ 1.9 billion give an average size of loan of about Col.\$ 4,600. This is perhaps the essential feature of the Caja; it makes many small loans. The average of cattle loans was somewhat bigger, about Col.\$ 8,700. The size of the Caja loan depends upon the purpose and the duration of the loan. In livestock, for instance, the loan is limited to Col.\$ 150,000 (Col.\$ 20,000 for fattening except in Los Llanos where the limit is Col.\$ 50,000). However, these regulations will not apply to the IBRD-Caja project.

14. The Caja secures all its loans either by a first mortgage on land and improvements or by a chattel mortgage on cattle or machinery. The loans cannot exceed 60 per cent of the value of the land or 50 per cent of the value of the cattle or 75 per cent of the value of the agricultural machinery.

15. The terms of its loans are adapted to the economic cycle of the expenditure financed. In livestock, for instance, fattening loans are made for no more than 18 months, and generally less than a year. Investors in corrals, fences, pastures, watering places, agricultural machinery, breeding animals, etc. can get credit up to five years. For breeding operations a two year grace period can be obtained.

16. There are variations in the rates of interest charged by the Caja but the general rule is the following:

	<u>Caja Interest Rates</u>		
	<u>Up to 1 year</u>	<u>1 to 5 years</u>	<u>Over 5 years</u>
Up to Col.\$ 5,000	8 %	10 %	12 %
Over Col.\$ 5,000	9 %	11 %	12 %

In addition, borrowers are required to contract a life insurance policy with the Caja at an annual cost of one per cent of the outstanding amount of the loan.

17. The Caja's collection record is good. From 1961 to 1964, the proportion of losses due to irrecuperable loans has been Col.\$ 1 for 10,000 lent. Delinquent loans during the same period have averaged 15 per cent of the total amount lent. The following table shows the trend in

(Col.\$ '000,000)

<u>Year</u>	<u>Total Loans</u>	<u>Delinquent Loans</u>	<u>Percentage</u>
1960	887	147	15.8
1961	1,068	182	15.9
1962	1,278	247	15.2
1963	1,714	392	14.4
1964	1,913	413	14.6

The essential reason for the good collection record is that the Caja, for the majority of the small farmers, is the only source of relative cheap credit to which they have access. Should they destroy their credit with the Caja, they would fall into the hands of money lenders.

#### E. Financial Situation

18. The ratio of net income to equity capital, on the return has steadily improved over the past five years, from 0.7 per cent in 1960 to 3.1 per cent in 1964. However, for the 6 months ended June 30, 1965 the net income has fallen sharply, due to seasonal swings and to contractionary credit regulations. It must be remembered that the primary objective of the Caja is not profit making.

19. Secondary reserves, defined as discountable loans plus near cash, have kept pace with the growth on deposits, thus reducing the chances of heavy withdrawals that would hinder the Caja's liquidity.

20. The ratio of total debt to paid-in capital and reserves has been the following over the past years:

<u>1960</u>	<u>1961</u>	<u>1962</u>	<u>1963</u>	<u>1964</u>
80/20	81/19	83/17	78/22	80/20

Summarized balance sheets and income statements are presented in the following tables.

## CAJA DE CREDITO AGRARIO INDUSTRIAL Y MINERO

## Summarized Balance Sheets

December 31, 1960-1964 and June 30, 1965

(in '000 of Col.\$)

	<u>1960</u>	<u>1961</u>	<u>1962</u>	<u>1963</u>	<u>1964</u>	<u>June 1965</u>
<b>ASSETS</b>						
Cash	26,439	42,489	65,501	51,296	141,804	144,095
Various debtors	66,992	84,809	82,584	90,595	82,113	99,901
<b>LOAN PORTFOLIO:</b>						
a) discounted or guaranteed	514,957	598,604	691,068	834,888	1,032,409	1,122,707
b) discountable	288,744	350,788	385,657	519,680	624,146	482,176
c) not discountable	78,190	110,655	190,396	344,709	264,093	310,021
d) other	5,418	8,311	10,973	14,883	23,203	30,330
Total Loan Portfolio	887,309	1,068,358	1,278,094	1,714,160	1,943,851	1,945,234
Mandatory Investments <sup>1/</sup>	200,579	204,593	194,422	240,548	259,428	321,495
Inventory <sup>2/</sup>	133,246	92,233	81,501	168,491	175,944	184,646
Works in progress <sup>3/</sup>	30,676	26,095	26,493	35,901	38,098	39,654
Crop promotion campaigns	11,562	14,654	16,360	14,957	20,992	14,059
Buildings and land	57,756	66,009	71,886	83,047	95,518	103,074
Other assets	214,430	283,621	309,216	182,486	225,664	245,959
Total Assets	1,628,989	1,882,861	2,126,057	2,581,481	2,983,412	3,098,117
	=====	=====	=====	=====	=====	=====
<b>LIABILITIES</b>						
Demand Deposits	164,162	194,521	224,513	294,884	384,612	387,989
Savings Deposits	375,494	401,843	481,697	628,984	693,122	675,247
Interest received in advance	23,732	29,972	35,982	60,596	66,782	70,672
Deferred Liabilities	34,754	34,344	35,336	38,602	55,856	64,927
Payable by insurance department	-	7,836	8,961	10,247	13,017	16,953
Public funds earmarked	20,589	43,393	42,678	46,371	51,268	34,873
P.L. 480 funds	118,503	154,909	183,870	17,368	16,363	14,870
Discounts with Central Bank	317,870	383,592	476,405	595,655	760,700	836,000
Bonds Issued	209,634	232,063	240,993	276,233	312,749	329,507
Long-term foreign loans	15,519	12,070	8,622	5,173	-	1,070
Other Liabilities	17,430	28,650	18,308	35,202	26,856	66,390
Total Liabilities	1,297,687	1,523,193	1,757,365	2,009,315	2,381,325	2,498,503
	=====	=====	=====	=====	=====	=====
<b>Capital Account:</b>						
Paid-in Capital	258,588	283,764	291,567	464,435	476,615	478,465
Legal Reserves	31,459	32,156	32,931	33,917	38,406	39,156
Other Provisions <sup>4/</sup>	39,070	39,837	39,357	62,900	71,981	80,504
Profits	2,185	3,911	4,837	10,914	15,085	1,489
Total Capital Account	331,302	359,668	368,692	572,166	602,087	599,614
	=====	=====	=====	=====	=====	=====
Total Liabilities and Capital Account	1,628,989	1,882,861	2,126,057	2,581,481	2,983,412	3,098,117
	=====	=====	=====	=====	=====	=====

**General Note:** The total figures for 1960 through 1963 are smaller than those produced by the Caja by the amount of unpaid capital in order to comply with the 1964 presentation.

<sup>1/</sup> See paragraph 8 and 9.

<sup>2/</sup> Mainly agricultural machinery and supplies of the Caja's stores.

<sup>3/</sup> Irrigation, land settlements and other civil works.

<sup>4/</sup> These are mainly reserves not elsewhere provided for, i.e. insurance foreign exchange losses and other contingencies.

CAJA DE CREDITO AGRARIO INDUSTRIAL Y MINEROSummarized Income and Expenditure StatementsDecember 31, 1960 - 1964\* and June 30, 1965 <sup>1/</sup>

(in '000 of Col.\$)

<u>INCOME</u>	<u>1960</u>	<u>1961</u>	<u>1962</u>	<u>1963</u>	<u>1964</u>	<u>June 1965</u>
Interest	70,290	82,234	101,911	131,781	186,929	101,072
Commissions, fees and other service charges	7,676	8,891	9,516	11,324	15,482	6,432
Income from savings invested	14,683	24,813	28,088	32,266	36,988	27,561
Other income	14,140	13,378	16,735	24,011	22,340	8,152
	<u>106,789</u>	<u>129,316</u>	<u>156,250</u>	<u>199,382</u>	<u>261,739</u>	<u>143,217</u>
	=====	=====	=====	=====	=====	=====
 <u>EXPENDITURE</u>						
Salaries and travel	37,136	40,342	47,803	59,957	73,789	38,265
Social charges	4,586	7,647	6,665	7,430	41,816	22,657
Interests and other charges	13,737	23,909	28,359	36,138	41,238	31,251
Interests paid on savings deposits	21,337	23,712	28,493	32,295	38,049	21,317
Reserves and provisions	14,316	15,597	23,764	34,654	28,806	13,626
Other	13,492	14,198	16,329	17,994	22,956	14,612
	<u>104,604</u>	<u>125,405</u>	<u>151,413</u>	<u>188,468</u>	<u>246,654</u>	<u>141,728</u>
	=====	=====	=====	=====	=====	=====
Net income	<u>2,185</u>	<u>3,911</u>	<u>4,837</u>	<u>10,914</u>	<u>15,085</u>	<u>1,489</u>
	=====	=====	=====	=====	=====	=====

<sup>1/</sup> The Caja's accounting period is 6 months. Yearly figures have been obtained by adding the six-monthly figures provided to the Central Bank which is the Caja's auditor.

INVESTMENT COSTS OF THE LA COSTA BEEF PROJECT

The La Costa Beef Project has 800 farms averaging 400 cows in herds of approximately 1,000 head using 500 ha of land.

<u>On-Farm Investments</u>	<u>Per Farm</u>	<u>Total</u>	
	Pesos	Pesos ('000)	US\$ ('000)
35 kms of fencing at 4 pesos per m.	14,000	11,205	1,240
1 Water point, pipes, troughs, pumps, etc.	30,000	24,000	2,670
1/3 Stock yard at 21,000	7,000	5,600	620
Clearing land 25 ha at 800	20,000	16,000	1,780
Improved bulls at 8,000	24,000	19,200	2,130
Pasture improvement 50 ha at 1,000	50,000	40,000	4,450
Machinery (farm)	13,000	10,400	1,160
<b>Total</b>	<b>158,000</b>	<b>126,400</b>	<b>14,050</b>

Heavy Machinery for Contractors

for Dam-building, clearing, well-boring	8,100	900
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Technical Services

a) <u>Staff</u>	<u>Number</u>	<u>Salary in Pesos per annum 1/</u>
Technical Director	1/4	62,000
Administr. Director	1/4	29,500
Chief Technician	3/4	159,000
Veterinarians	3	264,000
Technicians	11	968,000
Administration 2/	4	152,000
		<b>1,634,500</b>

3 Year Total	4,904	540
b) Purchase of Vehicles (16 at 31,500)	504	60
<b>Total Technical Services</b>	<b>5,408</b>	<b>600</b>
<b>Total La Costa Beef Project</b>	<b>139,908</b>	<b>15,550</b>

1/ Including Transport Costs

2/ Including Secretaries and minor staff

INVESTMENT COST OF THE LOS LLANOS BEEF PROJECT11. Los Llanos

The Los Llanos beef project has 90 farms averaging 400 cows in a herd of approximately 1,000 head on 500 ha of land.

<u>On-Farm Investments</u>	<u>Per Farm</u> Pesos	<u>Total</u>	
		Pesos ('000)	US\$ ('000)
20 km of fencing at 5.2 pesos per meter	104,000	9,360	1,040
1 1/2 water points at 20,000	30,000	2,700	300
1 stock yard at 20,000	20,000	1,800	200
3 improved Colombian bulls at 6,500	19,500	1,755	200
Farm Machinery	15,000	1,350	150
Seeds and Fertilizer	15,000	1,350	150
Purchase of 100 heifers at 1,000	100,000	9,000	1,000
	<u>          </u>	<u>          </u>	<u>          </u>
Total on-farm investments	303,500	27,315	3,040
	<u>          </u>	<u>          </u>	<u>          </u>
Heavy Contractor Machinery		900	100
<u>Technical Services</u>			
a) <u>Staff</u>	<u>Number</u>	<u>Salary in Pesos</u> <u>per annum 1/</u>	
Technical Director	1/4	62,000	
Administr. Director	1/4	29,500	
Chief Technician	-	-	
Veterinarians	1	88,000	
Technicians	1	88,000	
Administration 2/	4	152,000	
Total		<u>419,500</u>	
3 Year Total of Staff Costs		1,259	140
b) <u>Vehicles</u> (2 at 31,500)		<u>63</u>	<u>10</u>
Total Technical Services		<u>1,322</u>	<u>150</u>
Total Los Llanos project		<u>29,537</u>	<u>3,290</u>

1/ Including Transport costs

2/ Including Secretaries and Minor Staff

INVESTMENT COST OF THE NARINO DAIRY PROJECT

The Narino Dairy Project has 150 farms averaging 30 milking cows on approximately 56 hectares.

<u>On-Farm Investments</u>	<u>Per Farm</u> Pesos	<u>Total</u>	
		Pesos ('000)	US\$ ('000)
40 ha improved pasture at 1,100	44,000	6,600	730
8 ha alfalfa at 1,020	8,160	1,224	140
8 ha fodder oats at 530	4,240	636	70
2,800 m. fencing at 5	14,000	2,100	230
1 electric fencing unit	2,000	300	30
2 water supply points at 1,100	22,000	3,300	370
2 cow shed 1 dairy	12,000	1,800	200
1 tractor + farm machinery	38,250	5,737	640
22 dairy heifers at 2,000	44,000	6,600	730
1 dairy boiler and milk cooler	4,000	600	70
Miscellaneous	10,000	1,500	170
Total on-farm investments	202,650	30,397	3,380

Technical Services

a) <u>Staff</u>	<u>Number</u>	<u>Salary in Pesos</u> <u>per annum 1/</u>
Technical Director	1/8	31,000
Administr. Director	1/8	14,750
Chief Technician	1/2	106,000
Veterinarians	1	88,000
Technicians	2	176,000
Administration 2/	2	76,000
Total		491,750

3 Year Total of Staff Costs	1,476	160
b) <u>Purchase of vehicles 4</u>	126	10
Total Technical Services	1,602	170
Total Narino Dairy Project	31,999	3,550

1/ Including transport costs

2/ Including Secretaries and Minor Staff



INVESTMENT COSTS AT THE BARRANQUILLA DAIRY PROJECT

The Barranquilla Dairy Project has one hundred properties each with 100 dairy cowson 250 ha.

<u>On-Farm Investments</u>	<u>Per Farm</u> Pesos	<u>Total</u>	
		Pesos ('000)	US\$ ('000)
Land clearing 50 ha at 500	25,000	2,500	280
Pasture establishment 120 ha at 660	79,200	7,920	880
Pasture improvement 120 ha at 260	31,200	3,120	350
Silage Trench	6,000	600	70
Fencing 5,000 m. at 5 per m.	25,000	2,500	280
Electric fencing unit	2,000	200	20
Water supply one unit	12,000	1,200	130
Farm Machinery	36,000	3,600	400
Milking shed	15,000	1,500	170
Milking shed equipment	4,000	400	40
A.I. Flask	3,000	300	30
180 ampules semen at 100	18,000	1,800	200
Miscellaneous	15,000	1,500	170
<b>Total on-farm investments</b>	<b>271,400</b>	<b>27,140</b>	<b>3,020</b>

Dairy Cooperatives Equipment

Dairy Plant (Local costs 2,900,000 pesos)	5,393	600
A.I. Services (Local costs 100,000 pesos)	540	60

Technical Services

a) <u>Staff</u>	<u>Number</u>	<u>Salary in Pesos</u> <u>per annum 1/</u>
Technical Director	1/8	31,000
Adminstr. Director	1/8	14,750
Chief Technician	1/4	53,000
Veterinarians	1	88,000
Technicians	1	88,000
Administrators 2/	2	76,000
		<b>350,750</b>

3 Year Total	1,052	120
b) <u>Vehicles</u> (3) at 31,500	95	10
Total Technical Services	1,147	130
Total Barranquilla Dairy Project	34,220	3,810

1/ Including Transport Costs

2/ Including Secretaries and Minor Staff

INVESTMENT COSTS OF THE SHEEP PROJECTSheep

The sheep project has 35 farms with at least 300 ha of land suitable for artificial pastures and 515 imported sheep per farm.

<u>On-Farm Investments</u>	<u>Per Farm</u>	<u>Total</u>	
	<u>Pesos</u>	<u>Pesos ('000)</u>	<u>US\$ ('000)</u>
150 ha of improved pasture at 500	75,000	2,625	290
500 breeding ewes at 400	200,000	7,000	780
15 rams at 1,000	15,000	525	60
11 kms. fencing at 5,000	55,000	1,925	210
Water supply unit	15,000	525	60
Corrals, yard	6,000	210	20
Shearing machine	4,000	140	20
Fertilizing pasture (150 ha) at 80	12,000	420	50
1 Wool shed	5,000	175	20
Total on-farm investments	<u>387,000</u>	<u>13,545</u>	<u>1,510</u>

Technical Services

a) <u>Staff</u>	<u>Numbers</u>		<u>Salary in pesos</u> <u>per annum 1/</u>	
	<u>Narino</u>	<u>General</u>		
Tech. Director	1/8	1/8	62,000	
Administr. Director	1/8	1/8	29,500	
Chief Technicians	1/2	1	318,000	
Veterinarians	-	1	88,000	
Technicians	1	1	176,000	
Administrative 2/	2	2	152,000	
Total			<u>825,500</u>	
3 Year Total			2,477	270
b) <u>Vehicles</u> 2 + 3 = 5 at 31,500			<u>157</u>	<u>20</u>
Total Technical Services			<u>2,634</u>	<u>290</u>
Total Sheep Project			<u>16,179</u>	<u>1,800</u>

1/ Including transport

2/ Including Secretaries and Minor Staff

## CAJA DE CREDITO AGRARIO INDUSTRIAL Y MINERO

## Project Cash Flow Statement

(\$000 of U.S. Dollars)

Year	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
<b>1. CASH INFLOW</b>																		
<u>IBRD Funds:</u>																		
i. Loan to Farmers	2,500	5,000	5,000	2,500	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ii. Loan to Contractors	1,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
iii. Loan to Cooperatives	0,320	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
iv. Technical Services	0,095	0,127	0,127	0,031	-	-	-	-	-	-	-	-	-	-	-	-	-	-
a) Total IBRD Funds	3,915	5,127	5,127	2,531	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<u>Caja's Contribution:</u>																		
i. Loan to Farmers	0,830	1,670	1,670	0,830	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ii. Loan to Cooperatives	0,140	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
iii. Technical Services	0,240	0,320	0,320	0,080	-	-	-	-	-	-	-	-	-	-	-	-	-	-
b) Total Caja's Contribution	1,210	1,990	1,990	0,910	-	-	-	-	-	-	-	-	-	-	-	-	-	-
c) Repayment of Loan by Recipients <sup>1/</sup>	-	0,406	0,406	0,416	0,589	1,615	2,686	3,204	3,290	3,334	2,822	1,795	0,725	0,129	0,043	-	-	-
d) Interest paid by Recipients (12%)	0,378	0,927	1,678	2,428	2,357	2,163	1,841	1,457	1,062	0,662	0,323	0,108	0,020	0,011	0,005	-	-	-
e) Total (c + d)	0,378	1,333	2,084	2,844	2,946	3,778	4,527	4,661	4,352	3,996	3,145	1,903	0,745	0,140	0,048	-	-	-
f) Total Receipts (a + b + e)	5,503	8,450	9,201	6,285	2,946	3,778	4,527	4,661	4,352	3,996	3,145	1,903	0,745	0,140	0,048	-	-	-
<b>2. CASH OUTFLOW</b>																		
<u>Loans:</u>																		
i. To Farmers	3,330	6,670	6,670	3,330	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ii. To Contractors	1,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
iii. To Cooperatives	0,460	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
g) Total Loans	4,790	6,670	6,670	3,330	-	-	-	-	-	-	-	-	-	-	-	-	-	-
h) Administrative Cost (2%) <sup>2/</sup>	0,048	0,162	0,291	0,392	0,417	0,400	0,366	0,312	0,246	0,178	0,110	0,054	0,020	0,020	0,020	-	-	-
i) Technical Assistance	0,335	0,447	0,447	0,111	0,100	0,100	0,100	0,100	0,100	0,100	0,100	0,100	0,100	0,100	0,100	-	-	-
j) Foreign Exchange Risk (2%) <sup>3/</sup>	0,039	0,129	0,232	0,334	0,334	0,334	0,325	0,306	0,285	0,264	0,241	0,217	0,190	0,163	0,134	0,104	0,071	0,036
k) Sub-total (g + h + i + j)	5,212	7,408	7,640	4,167	0,851	0,834	0,791	0,718	0,631	0,542	0,451	0,371	0,310	0,283	0,254	0,104	0,071	0,036
l) Repayments of IBRD Loan	-	-	-	-	-	0,460	0,955	1,015	1,075	1,145	1,215	1,290	1,370	1,450	1,535	1,630	1,730	1,830
m) Interest Payments (6%)	0,125	0,292	0,459	0,626	0,793	0,960	0,960	0,901	0,840	0,775	0,704	0,631	0,552	0,469	0,381	0,287	0,188	0,083
n) Commitment Charge (3/8%)	0,006	0,004	0,002	0,001	-	-	-	-	-	-	-	-	-	-	-	-	-	-
o) Total Payments to IBRD	0,131	0,296	0,461	0,627	0,793	1,420	1,915	1,916	1,915	1,920	1,919	1,921	1,922	1,919	1,916	1,917	1,918	1,913
p) Total Payments (k + o)	5,343	7,704	8,101	4,794	1,644	2,254	2,706	2,634	2,546	2,462	2,370	2,292	2,232	2,202	2,170	2,021	1,989	1,949
q) Balance before Caja's Recovery (f - p)	0,160	0,746	1,100	1,491	1,302	1,524	1,821	2,027	1,806	1,534	0,775	(0,389)	(1,487)	(2,062)	(2,122)	(2,021)	(1,989)	(1,949)
r) Caja's Recovery of Principal	-	-	-	-	0,600	0,700	0,700	0,700	0,700	0,700	0,700	0,700	0,600	-	-	-	-	-
s) Interest (2%)	0,013	0,043	0,079	0,122	0,122	0,110	0,096	0,082	0,072	0,058	0,044	0,030	0,014	-	-	-	-	-
t) Balance Remaining (q - r - s)	0,147	0,703	1,021	1,369	0,580	0,714	1,025	1,245	1,034	0,776	0,031	(1,119)	(2,101)	(2,062)	(2,122)	(2,021)	(1,989)	(1,949)
u) Interest Earned on Cash Surplus <sup>4/</sup>	-	0,015	0,086	0,197	0,354	0,447	0,563	0,722	0,919	1,148	1,307	1,329	1,251	1,170	1,075	0,980	0,880	0,773
x) Balance (t + u)	0,147	0,718	1,107	1,566	0,934	1,161	1,588	1,967	1,953	1,924	1,338	0,210	(0,850)	(0,892)	(1,047)	(1,041)	(1,109)	(1,176)
y) Accumulated	0,147	0,865	1,972	3,538	4,472	5,633	7,221	9,194	11,147	13,071	14,409	14,619	13,769	12,877	11,830	10,789	9,680	8,540

**Notes:**

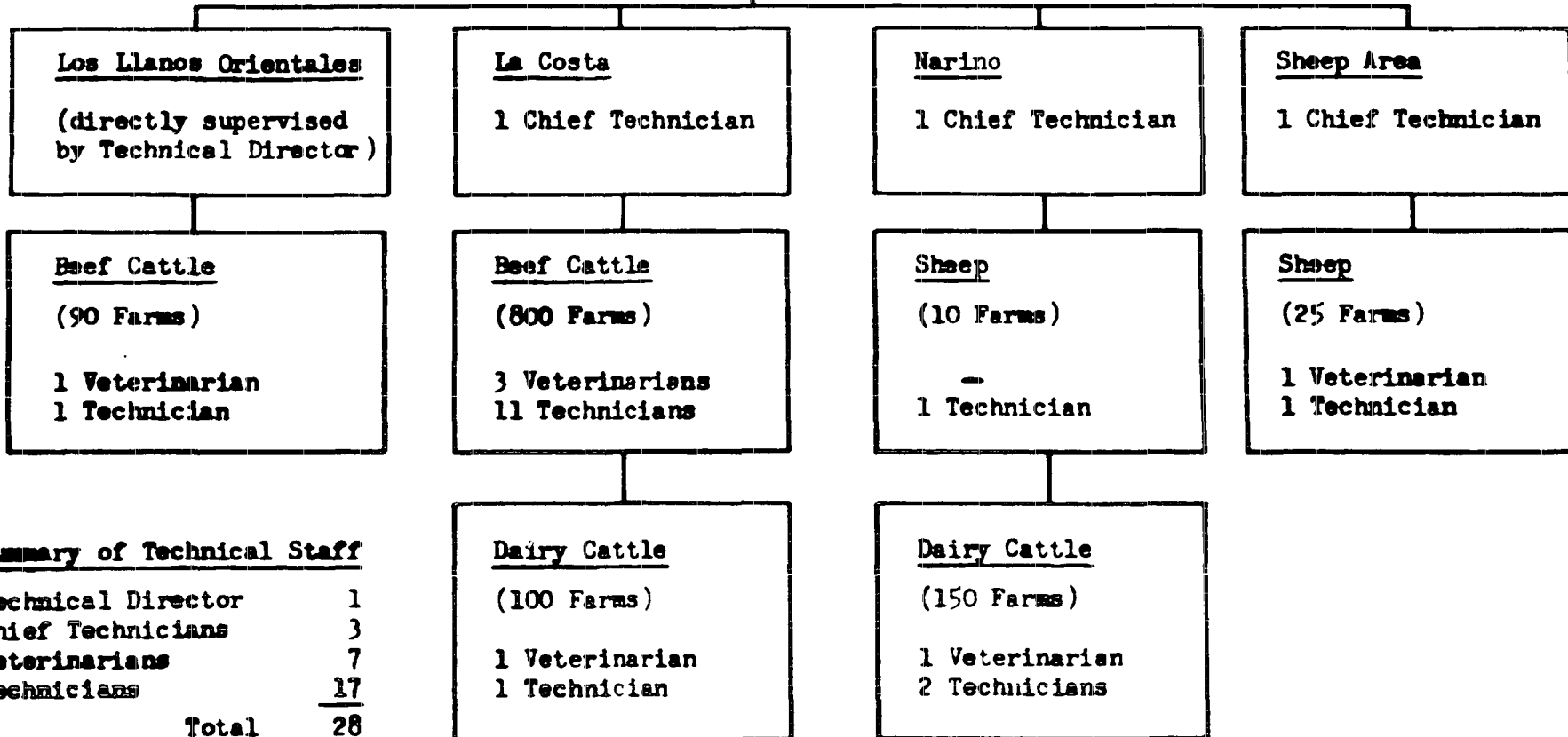
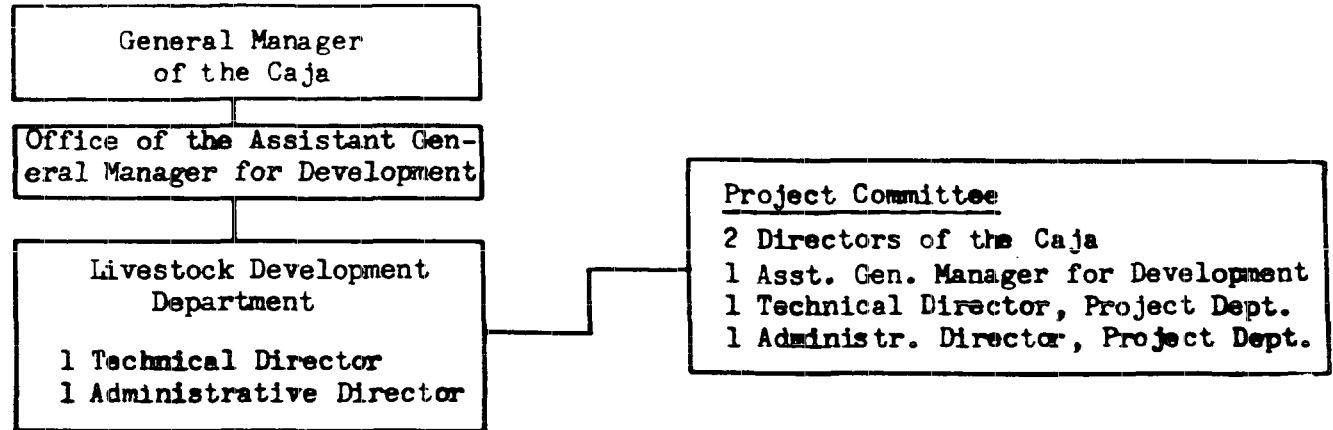
<sup>1/</sup> Amortization schedule was established on the following basis: contractors, one year of grace, three years repayment; cooperatives, one year of grace, six years repayment; dairy and beef farmers, four years of grace, six years repayment; sheep farmers, six years of grace, six years repayment.

<sup>2/</sup> Caja's estimated cost applied to outstanding balances on loans to farmers.

<sup>3/</sup> Interest paid to the "Banco de la Republica" on outstanding foreign exchange balances.

<sup>4/</sup> It was assumed that cash surplus accumulated in previous year will be used for additional loans to livestock farmers at a net interest rate of 10 per cent. The gross rate would be about 12 per cent, allowing 2 per cent for administrative cost.

Organization Chart of the Livestock Development Project



Summary of Technical Staff

Technical Director	1
Chief Technicians	3
Veterinarians	7
Technicians	<u>17</u>
<b>Total</b>	<b>28</b>

DEVELOPMENT OF A 400 COW "LA COSTA" BEEF CATTLE FARM

A. STOCK AND SALES PROJECTION (NUMBER OF HEADS)

Year	Before Development	1	2	3	4	5	6	7	8	9	10	11	12
<b>1. Livestock Inventory</b>													
Cows	400	400	410	420	429	436	442	457	491	500	500	500	500
Bulls	20	20	21	22	22	22	22	23	24	25	25	25	25
Calves Branded	200	220	246	294	322	327	332	343	368	375	375	375	375
One Year Old Mixed <sup>1/</sup>	194	194	214	239	285	313	317	322	333	357	364	364	364
Two Year Old Mixed <sup>2/</sup>	188	190	190	210	235	280	307	311	316	327	350	357	357
Three Year Old Heifers <sup>3/</sup>	91	93	94	94	104	116	139	152	154	156	162	173	177
Three Year Old Steers <sup>3/</sup>	91	93	47	-	-	-	-	-	-	-	-	-	-
<b>Total</b>	<b>1,184</b>	<b>1,210</b>	<b>1,222</b>	<b>1,279</b>	<b>1,397</b>	<b>1,494</b>	<b>1,559</b>	<b>1,608</b>	<b>1,686</b>	<b>1,740</b>	<b>1,776</b>	<b>1,794</b>	<b>1,798</b>
<b>2. Sales</b>													
Three Year Old Steers @ Col.\$ 1,600	-	-	47	94	104	116	139	152	154	156	162	173	177
Four Year Old Steers @ Col.\$ 1,600	88	90	92	46	-	-	-	-	-	-	-	-	-
Cull Cows @ Col.\$ 1,020	72	72	74	76	78	78	79	82	88	90	90	90	90
Cull Heifers @ Col.\$ 1,000	8	-	-	-	-	10	12	13	44	53	55	61	72
Heifers for Cow Replacements <sup>4/</sup>	80	80	82	84	86	87	88	91	98	100	100	100	100
Heifers for Herd Increase	-	10	10	9	7	6	15	34	9	-	-	-	-
Cull Heifers for Sale	8	-	-	-	-	10	12	13	44	53	55	61	72
<b>Total Number of Heifers</b>	<b>88</b>	<b>90</b>	<b>92</b>	<b>93</b>	<b>93</b>	<b>103</b>	<b>115</b>	<b>138</b>	<b>151</b>	<b>153</b>	<b>155</b>	<b>161</b>	<b>172</b>
<b>Calving Percentage</b>	<b>50</b>	<b>55</b>	<b>60</b>	<b>70</b>	<b>75</b>	<b>75</b>	<b>75</b>	<b>75</b>	<b>75</b>	<b>75</b>	<b>75</b>	<b>75</b>	<b>75</b>

General Note: Mortality rate before development has been estimated at 3 per cent from calves branded to four year old steers.

- <sup>1/</sup> Mortality rate 3 per cent.
- <sup>2/</sup> Mortality rate 2 per cent
- <sup>3/</sup> Mortality rate 1 per cent
- <sup>4/</sup> To replace cull cows and dead cows (mortality rate of cows: 2 per cent)

DEVELOPMENT OF A 400 COW "LA COSTA" BEEF CATTLE FARM

2. FINANCIAL PROJECTION (IN PESOS)

Year	Before Development	1	2	3	4	5	6	7	8	9	10	11	12
1. Sales	222,240	217,440	297,880	301,520	245,920	275,120	314,980	339,840	380,160	394,400	406,000	429,600	447,000
2. Operating Costs:													
(a) Wages	10,400	10,400	11,000	11,200	11,440	11,600	11,800	12,200	13,080	13,320	13,320	13,320	13,320
(b) Sanitation	15,984	16,335	16,497	17,266	18,859	20,169	21,046	21,708	22,761	23,490	23,976	24,219	24,273
(c) Purchase of Bulls	-	1,600	3,600	3,600	2,000	2,000	4,000	4,000	4,000	4,000	2,000	2,000	2,000
(d) Repair and Maintenance	15,984	16,335	16,497	17,266	18,859	20,169	21,046	21,708	22,761	23,490	23,976	24,219	24,273
(e) Taxes (1% of Sales)	2,222	2,174	2,979	3,015	2,459	2,751	3,150	3,398	3,802	3,944	4,060	4,296	4,470
(f) Other <sup>1/</sup>	11,840	12,100	12,220	13,120	13,970	14,940	15,590	16,080	16,860	17,400	17,760	17,940	17,980
Total	56,250	58,944	62,793	65,467	67,587	71,629	74,632	79,094	83,264	85,644	85,092	85,994	86,315
3. Income Before Debt Service	165,990	158,496	235,087	236,053	178,333	203,491	240,348	260,746	296,896	308,756	320,908	343,606	360,684
4. Farmer's Contribution <sup>2/</sup>	-	15,800	15,800	-	-	-	-	-	-	-	-	-	-
5. Interest (12%)	-	7,585	15,169	15,169	15,169	15,169	13,905	11,377	8,849	6,320	3,792	1,264	-
6. Loan Repayment	-	-	-	-	-	10,535	21,066	21,066	21,066	21,066	21,066	10,535	-
7. Balance after Debt Service	165,990	135,111	204,118	220,884	163,164	177,787	205,377	228,303	266,981	281,370	296,050	331,807	360,684
8. Annual Difference <sup>3/</sup>	-	(30,879)	38,128	54,894	(2,826)	11,797	39,387	62,313	100,991	115,380	130,060	165,817	194,694
9. Accumulated	-	(30,879)	7,249	62,143	59,317	71,114	110,501	172,814	273,805	389,186	519,246	685,063	879,757
10. Value of Increased Stock <sup>4/</sup>	-	13,600	4,000	111,200	191,700	267,600	324,400	367,500	434,300	474,000	502,600	519,200	523,200

Notes:

- (1) Including contingencies
- (2) Farmer's contribution accounts for 20 per cent of a total investment of Col.\$ 158,000.
- (3) As compared with balance before development.
- (4) Value of increased stock as compared with value before development.

DEVELOPMENT OF A 400 COW "LOS LLANOS" BEEF CATTLE FARM

A. STOCK AND SALES PROJECTION (NUMBER OF HEADS)

Year	Before Development	1	2	3	4	5	6	7	8	9	10	11	12
<b>1. <u>Livestock Inventory</u></b>													
Purchased young cows or heifers	-	50	50	-	-	-	-	-	-	-	-	-	-
Cows	400	400	452	506	510	514	518	520	545	565	582	597	610
Bulls	21	22	23	24	25	25	26	26	27	28	29	30	30
Calves Branded	180	225	276	303	306	308	310	312	327	339	350	358	366
One Year Old Mixed <sup>1/</sup>	175	175	218	268	294	297	299	301	303	318	329	340	348
Two Year Old Mixed <sup>2/</sup>	170	172	172	214	263	288	291	293	295	297	312	323	333
Three Year Old Heifers <sup>3/</sup>	83	85	85	85	106	130	143	144	145	146	147	155	160
Three Year Old Steers <sup>4/</sup>	83	85	58	27	-	-	-	-	-	-	-	-	-
<b>Total</b>	<b>1,112</b>	<b>1,214</b>	<b>1,334</b>	<b>1,427</b>	<b>1,504</b>	<b>1,562</b>	<b>1,587</b>	<b>1,596</b>	<b>1,642</b>	<b>1,693</b>	<b>1,749</b>	<b>1,803</b>	<b>1,847</b>
<b>2. <u>Sales</u></b>													
Three Year Old Steers @ Col.\$ 1,500	-	-	27	58	106	130	143	144	145	146	147	155	160
Four Year Old Steers @ Col.\$ 1,500	80	82	84	58	27	-	-	-	-	-	-	-	-
Cull Cows @ Col.\$ 940	72	72	72	73	73	93	93	94	98	102	104	107	110
Cull Heifers @ Col.\$ 920	-	-	-	-	-	-	12	13	14	14	14	14	15
Heifers for Cow Replacement <sup>4/</sup>	80	80	80	81	81	102	103	104	109	113	116	119	122
Heifers for Herd Increase	-	2	4	4	4	4	14	25	20	17	15	13	17
Cull Heifers for Sale	-	-	-	-	-	-	12	13	14	14	14	14	15
Total Number of Heifers (4 years)	80	82	84	85	85	106	129	142	143	144	145	146	154
Calving Percentage	45	50	55	60	60	60	60	60	60	60	60	60	60

General Note: Mortality rate before development has been estimated at 3 per cent from calves branded to four year old steers.

- <sup>1/</sup> Mortality rate 3 per cent.
- <sup>2/</sup> Mortality rate 2 per cent.
- <sup>3/</sup> Mortality rate 1 per cent.
- <sup>4/</sup> To replace cull cows and dead cows (mortality rate of cows: 2 per cent).

DEVELOPMENT OF A 400 COW "LOS LLANOS" BEEF CATTLE FARM

B. FINANCIAL PROJECTION (IN PESOS)

Year	Before Development	1	2	3	4	5	6	7	8	9	10	11	12
1. Sales	187,680	190,680	234,180	242,620	268,120	282,420	312,960	316,320	322,500	328,260	331,140	345,960	357,200
2. Operating Costs:													
(a) Wages	11,700	13,500	14,985	14,985	15,300	15,435	15,525	15,570	16,335	16,920	17,460	17,900	18,270
(b) Sanitation	15,012	16,389	18,009	19,264	20,304	21,087	21,424	21,546	22,167	22,855	23,611	24,340	24,934
(c) Purchase of Bulls	-	4,000	4,500	4,500	4,500	2,500	4,500	2,500	4,500	4,500	5,000	5,000	3,000
(d) Repair and Maintenance	15,012	16,389	18,009	19,264	20,304	21,087	21,424	21,546	22,167	22,855	23,611	24,340	24,934
(e) Taxes (1% of sales)	1,877	1,907	2,342	2,426	2,681	2,824	3,130	3,163	3,225	3,283	3,311	3,460	3,572
(f) Other <sup>1/</sup>	11,120	12,140	13,340	14,270	15,040	15,620	15,870	15,960	16,420	16,930	17,490	18,030	18,470
Total	54,721	64,325	71,185	74,709	78,129	78,553	81,873	80,285	84,814	87,343	90,483	93,070	93,176
3. Income Before Debt Service	132,959	126,355	162,995	167,911	189,991	203,867	231,087	236,035	237,686	240,917	240,657	252,890	264,024
4. Farmer's contribution <sup>2/</sup>	-	30,350	30,350	-	-	-	-	-	-	-	-	-	-
5. Interest (12%)	-	14,569	29,138	29,138	29,138	29,138	26,710	21,854	16,998	12,141	7,285	2,429	-
6. Loan Repayments	-	-	-	-	-	20,235	40,466	40,466	40,466	40,466	40,466	20,235	-
7. Balance After Debt Service	132,959	81,436	103,507	138,773	160,853	154,494	163,911	173,715	180,222	188,310	192,906	230,226	264,024
8. Annual Difference <sup>3/</sup>	-	(51,523)	(29,452)	5,814	27,894	21,535	30,952	40,756	47,263	55,351	59,947	97,267	131,065
9. Accumulated	-	(51,523)	(80,975)	(75,161)	(47,267)	(25,732)	5,220	45,976	93,239	148,590	208,537	305,804	436,869
10. Value of Increased Stock <sup>4/</sup>	-	81,950	157,820	203,660	335,670	384,410	406,390	412,340	451,440	490,580	533,300	569,560	605,870

Notes:

- (1) Including contingencies.
- (2) Farmer's contribution accounts for 20 per cent of a total investment of Col.\$ 303,500.
- (3) As compared with balance before development.
- (4) Value of increased stock as compared with value before development.



DEVELOPMENT OF A 30 COW "MARINO" DAIRY FARM  
(48 Hectares)

A. STOCK AND SALES PROJECTION (NUMBER OF HEADS)

Year		Before Development	1	2	3	4	5	6	7	8	9	10	11	12
<b>1. Livestock Inventory</b>														
Dairy Cows	No. <sup>1/</sup>	30	26	37	46	46	50	55	60	60	60	60	60	60
Heifers (2 years)	No.	6	17 <sup>2/</sup>	17 <sup>2/</sup>	9	15	18	19	20	22	24	24	24	24
Heifers (1 year)	No.	7	7	9	15	18	19	20	22	24	24	24	24	24
Heifers Calves	No.	8	10	16	19	20	21	23	25	25	25	25	25	25
Total	No.	51	60	79	89	99	108	117	127	131	133	133	133	133
Meaning Performance	%	55	75	85	85	85	85	85	85	85	85	85	85	85
<b>2. Sales</b>														
Cull Cows @ Col.\$ 1,000	No.	5	9	5	7	8	9	10	11	12	12	12	12	12
Cull Heifers @ Col.\$ 1,500	No.	-	-	-	-	-	1	2	2	7	9	11	11	11
Calves @ Col.\$ 100	No.	8	10	16	19	20	21	23	25	25	25	25	25	25
Milk @ Col.\$ 0.90	Kg.	36,000	41,600	66,600	92,000	101,200	120,000	143,100	168,000	180,000	180,000	180,000	180,000	180,000
Milk Per Cow Per Annum	Kg.	1,200	1,600	1,800	2,000	2,200	2,400	2,600	2,800	3,000	3,000	3,000	3,000	3,000

Notes:

<sup>1/</sup> Unit of Account.

<sup>2/</sup> Provision is made for the purchase of 10 two year old heifers in the first and the second year.

DEVELOPMENT OF A 30 COW "NARINO" DAIRY FARM

B. FINANCIAL PROJECTION (IN PESOS)

Year	Before Development	1	2	3	4	5	6	7	8	9	10	11	12
1. Sales:													
(a) Milk	32,400	37,440	59,940	82,800	91,080	108,000	128,790	151,200	162,000	162,000	162,000	162,000	162,000
(b) Livestock	5,800	10,000	6,600	8,900	10,000	12,600	15,300	16,500	25,000	28,000	31,000	31,000	31,000
Total	38,200	47,440	66,540	91,700	101,080	120,600	144,090	167,700	187,000	190,000	193,000	193,000	193,000
2. Operating Costs:													
(a) Wages	12,000	12,000	16,000	20,000	20,000	24,000	24,000	28,000	28,000	32,000	32,000	32,000	32,000
(b) Fertilizer	-	-	-	1,120	3,840	3,840	3,840	3,840	3,840	3,840	3,840	3,840	3,840
(c) Tractor Operating Costs	-	2,000	3,000	4,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000
(d) Artificial Insemination	-	2,600	2,700	3,600	4,500	4,800	5,100	5,400	5,700	6,000	6,000	6,000	6,000
(e) Veterinary Costs	688	810	1,066	1,201	1,336	1,458	1,579	1,714	1,768	1,796	1,796	1,796	1,796
(f) Repair and Maintenance	357	810	2,370	2,670	2,970	3,240	3,510	3,810	3,930	3,999	3,999	3,999	3,999
(g) Other <sup>1/</sup>	510	600	790	890	990	3,560 <sup>5/</sup>	6,670 <sup>5/</sup>	10,270 <sup>5/</sup>	13,310 <sup>5/</sup>	13,330 <sup>5/</sup>	13,330 <sup>5/</sup>	13,330 <sup>5/</sup>	13,330 <sup>5/</sup>
Total	13,555	18,820	25,926	33,481	39,636	46,918	50,699	59,034	62,548	66,965	66,965	66,965	66,965
3. Income Before Debt Service	24,645	28,620	40,614	58,219	61,444	73,682	93,391	108,666	124,452	123,035	126,035	126,035	126,035
4. Farmer's Contribution <sup>2/</sup>	-	20,265	20,265	-	-	-	-	-	-	-	-	-	-
5. Interest (12%)	-	9,728	19,457	19,457	19,457	19,457	17,835	14,591	11,349	8,106	4,864	1,621	-
6. Loan Repayment	-	-	-	-	-	13,510	27,020	27,020	27,020	27,020	27,020	13,510	-
7. Balance After Debt Service	24,645	(1,373)	892	38,762	41,987	40,715	46,536	67,055	86,083	87,909	94,151	110,904	126,035
8. Annual Difference <sup>3/</sup>	-	(26,018)	(23,753)	14,117	17,342	16,070	23,891	42,410	61,438	63,264	69,506	86,259	101,390
9. Accumulated	-	(26,018)	(49,771)	(35,654)	(18,312)	(2,242)	21,649	64,059	125,497	188,761	258,267	344,526	445,916
10. Value of Increased Stock <sup>4/</sup>	-	8,900	34,100	46,700	58,900	72,600	85,500	99,400	104,400	107,400	107,400	107,400	107,400

Notes:

- <sup>1/</sup> Includes taxes and contingencies
- <sup>2/</sup> Farmer's contribution accounts for 20 per cent of a total investment of Col.\$ 202,650
- <sup>3/</sup> As compared with balance before development
- <sup>4/</sup> Value of increased stock as compared with value before development
- <sup>5/</sup> Allowance is made for concentrates

DEVELOPMENT OF A 100 COW "BARANQUILLA" DAIRY FARM

A. STOCK AND SALES PROJECTION (NUMBER OF HEADS)

Year	Before												
	Development	1	2	3	4	5	6	7	8	9	10	11	12
<b>1. Livestock Inventory</b>													
(a) Criollo-Zebu Cows No. <sup>1/</sup>	100	100	106	112	90	65	37	5	-	-	-	-	-
(b) <sup>1/2</sup> Criollo-Zebu-Holstein and Upwards Cows No.	-	-	-	-	35	76	124	175	200	200	200	200	200
Total Cows No.	100	100	106	112	125	141	161	180	200	200	200	200	200
2 Year Heifers No.	26	26	28	35	41	48	51	58	66	72	81	81	81
(Of Which Criollo-Zebu) No.	(26)	(26)	(28)	-	-	-	-	-	-	-	-	-	-
1 Year Heifers No.	27	29	36	44	49	52	59	67	74	83	83	83	83
(Of Which Criollo-Zebu) No.	(27)	(29)	-	-	-	-	-	-	-	-	-	-	-
Calves Heifer No.	30	37	45	47	53	60	68	76	85	85	85	85	85
(Of Which Criollo-Zebu) No.	(30)	-	-	-	-	-	-	-	-	-	-	-	-
Total	193	192	215	238	268	301	339	381	425	440	449	449	449
Weaning Performance <sup>2/</sup>	%	60	75	85	85	85	85	85	85	85	85	85	85
<b>2. Sales</b>													
Cull Cows @ Col.\$ 1,200 No.	16	18	18	20	20	23	25	29	32	36	36	36	36
Cull Heifers <sup>2/</sup> No.	6	-	-	-	-	-	-	-	2	26	32	41	41
Calves @ Col.\$ 100 No.	30	37	45	47	53	60	68	76	85	85	85	85	85
Milk @ Col.\$ 130 Kg.	90,000	100,000	116,600	134,400	175,000	225,600	289,800	360,000	440,000	480,000	500,000	500,000	500,000
Milk Per Cow Per Annum Kg.	900	1,000	1,100	1,200	1,400	1,600	1,800	2,000	2,200	2,400	2,500	2,500	2,500

General Note: Milking head replacement including deaths 20 per cent.

<sup>1/</sup> Unit of Account.

<sup>2/</sup> Cull Heifers sales price before development Col.\$ 1,200 each and Col.\$ 2,000 thereafter.

DEVELOPMENT OF A 100 COW "BARRANQUILLA" DAIRY FARM

B. FINANCIAL PROJECTION (IN PESOS)

Year	Before Development	1	2	3	4	5	6	7	8	9	10	11	12
<b>1. Sales</b>													
(a) Milk	117,000	130,000	151,580	174,720	227,500	293,800	376,740	468,000	572,000	624,000	650,000	650,000	650,000
(b) Livestock	29,400	25,300	26,100	28,700	29,300	33,600	36,800	42,400	50,900	103,700	115,700	133,700	133,700
<b>Total</b>	<b>146,400</b>	<b>155,300</b>	<b>177,680</b>	<b>203,420</b>	<b>256,800</b>	<b>327,400</b>	<b>413,540</b>	<b>510,400</b>	<b>622,900</b>	<b>727,700</b>	<b>765,700</b>	<b>783,700</b>	<b>783,700</b>
<b>2. Operating Costs:</b>													
(a) Wages	40,000	40,000	40,000	44,000	48,000	56,000	64,000	72,000	80,000	80,000	80,000	80,000	80,000
(b) Silage Crop <u>1/</u>	1,000	2,700	2,700	2,700	2,700	2,700	2,700	2,700	2,700	2,700	2,700	2,700	2,700
(c) Tractor Operating Costs	2,000	4,000	4,000	6,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000
(d) Artificial Insemination	-	10,000	10,600	11,200	12,500	14,100	16,000	18,000	20,000	20,000	20,000	20,000	20,000
(e) Veterinary Costs	2,470	2,592	2,902	3,213	3,618	4,063	4,576	5,143	5,737	5,940	6,061	6,061	6,061
(f) Repair and Maintenance	1,281	2,592	6,450	7,140	8,040	9,030	10,170	11,430	12,750	13,200	13,470	13,470	13,470
(g) Other <u>2/</u>	1,083	1,920	2,150	2,380	2,680	3,010	3,390	3,810	4,250	7,940 <sup>6/</sup>	15,450 <sup>6/</sup>	15,450 <sup>6/</sup>	15,450 <sup>6/</sup>
<b>Total</b>	<b>47,834</b>	<b>63,804</b>	<b>68,802</b>	<b>76,633</b>	<b>85,538</b>	<b>96,903</b>	<b>108,936</b>	<b>121,083</b>	<b>133,437</b>	<b>137,780</b>	<b>145,681</b>	<b>145,681</b>	<b>145,681</b>
<b>3. Income Before Debt Service</b>	<b>98,566</b>	<b>91,496</b>	<b>108,878</b>	<b>126,787</b>	<b>171,262</b>	<b>230,497</b>	<b>304,604</b>	<b>389,317</b>	<b>489,463</b>	<b>589,920</b>	<b>620,019</b>	<b>638,019</b>	<b>639,019</b>
<b>4. Farmer's Contribution <u>3/</u></b>	-	27,140	27,140	-	-	-	-	-	-	-	-	-	-
<b>5. Interest (12%)</b>	-	13,029	26,057	26,057	26,057	26,057	23,885	19,542	15,200	10,857	6,513	2,171	-
<b>6. Loan Repayment</b>	-	-	-	-	-	18,095	36,186	36,186	36,186	36,186	36,186	18,095	-
<b>7. Balance After Debt Service</b>	<b>98,566</b>	<b>51,300</b>	<b>55,681</b>	<b>100,737</b>	<b>145,205</b>	<b>186,345</b>	<b>244,533</b>	<b>333,589</b>	<b>438,077</b>	<b>542,877</b>	<b>577,320</b>	<b>617,753</b>	<b>639,019</b>
<b>8. Annual Difference <u>4/</u></b>	-	(47,266)	(42,885)	2,171	46,639	87,779	145,967	235,023	339,511	444,311	478,754	519,187	540,453
<b>9. Accumulated</b>	-	(47,266)	(90,151)	(87,980)	(41,341)	46,438	192,405	427,428	766,939	1,211,250	1,690,004	2,209,191	2,749,644
<b>10. Value of Increased Stock <u>5/</u></b>	-	4,250	34,000	73,500	125,750	185,250	252,000	325,500	402,500	425,750	443,750	443,750	443,750

Notes:

- 1/ Includes seeds and fertilizers
- 2/ Includes taxes and contingencies
- 3/ Farmer's contribution accounts for 20 per cent of a total investment of Col.\$ 271,400
- 4/ As compared with balance before development
- 5/ Value of increased stock as compared with value before development
- 6/ Allowance is made for concentrates

DEVELOPMENT OF A PILOT SHEEP FARM<sup>1/</sup>

A. Stock and Sales Projection (Number of Heads)

Year	1	2	3	4	5	6	7	8	9	10	11	12	13	14
<b>1. Sheep Inventory</b>														
Ewes	No. <sup>2/</sup>	200 <sup>3/</sup>	490 <sup>3/</sup>	528	666	823	1,022	1,128	1,239	1,500	1,500	1,500	1,500	1,500
Rams	No.	6 <sup>4/</sup>	15 <sup>4/</sup>	16	20	25	31	33	37	45	45	45	45	45
Lambs	No.	140	367	422	533	658	818	902	991	1,200	1,200	1,200	1,200	1,200
Ewe Hogget		-	66	173	200	253	312	389	428	471	570	570	570	570
Ram Hogget		-	66	173	200	253	312	389	428	471	570	570	570	570
Wethers		-	-	-	-	-	-	67	162	302	529	745	750	750
<b>Total</b>		<b>346</b>	<b>1,004</b>	<b>1,312</b>	<b>1,619</b>	<b>2,012</b>	<b>2,495</b>	<b>2,519</b>	<b>3,285</b>	<b>3,989</b>	<b>4,414</b>	<b>4,630</b>	<b>4,635</b>	<b>4,635</b>
<b>2. Sales<sup>5/</sup></b>														
Ram Hogget <sup>6/</sup>	No.	-	62	160	185	235	297	300	300	300	300	300	300	300
Cull Ewes or Ewe Hoggets <sup>7/</sup>	No.	-	-	-	-	-	-	140	203	84	373	467	467	467
Cull Wethers for Mutton <sup>8/</sup>	No.	-	-	-	-	-	-	-	-	-	-	200	200	200
Wool (Col. \$ per kg)	Kg.	876	2,403	2,971	3,684	4,574	5,673	6,711	7,776	9,727	11,095	12,067	12,090	12,090

General Note: Lambing rate: first year 70 per cent, second year 75 per cent. Thereafter, 80 per cent. Adult mortality five per cent. Ewes are replaced after 6 years at 70 per cent of original ewes hoggets or imported stock.

1/ The farm will need 150 hectares of improved pastures plus a further 150 hectares later and 400 hectares of permanent grazing.

2/ Unit of account.

3/ Ewes purchased: first year 200, second year 300.

4/ Rams purchased: first year six, second year seven.

5/ Ewe and ewe hoggets give 3.5 kgs. of wool; rams 6 kgs.; lambs 1 kg.; wethers 4.5 kgs. Wool clip excludes ram hoggets sold with wool on. No wool income for cull ewes or hoggets is allowed for.

6/ Col. \$ 300 (1/3 or import costs)

7/ Col. \$ 200 (1/2 of import costs)

8/ Col. \$ 120.

DEVELOPMENT OF A PILOT SHEEP FARM

B. FINANCIAL PROJECTION (IN PESOS)

Year	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Sales:														
(a) Sheep	-	18,600	48,000	55,500	70,500	89,100	118,000	130,600	106,800	164,600	183,400	207,400	207,400	207,400
(b) Wool	13,140	36,045	44,565	55,260	68,510	85,095	100,665	116,640	145,905	166,425	181,005	181,350	181,350	181,350
Total	13,140	54,645	92,565	110,760	139,110	174,195	218,665	247,240	252,705	331,025	364,405	388,750	388,750	388,750
2. Operating Costs:														
(a) Wages	4,000	12,800	17,600	21,600	26,800	33,600	40,120	46,400	46,400	64,400	68,400	68,500	68,500	68,500
(b) Establishing Pastures <sup>1/</sup>	-	-	-	-	-	25,000	-	25,000	-	25,000	-	25,000	-	25,000
(c) Fertilizers <sup>2/</sup>	-	-	-	-	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000
(d) Sanitation	2,060	6,370	8,900	10,860	13,540	15,770	20,060	22,940	23,180	32,140	34,300	34,350	34,350	34,350
(e) Sheering	206	637	890	1,086	1,354	1,677	2,006	2,294	2,318	3,214	3,430	3,435	3,435	3,435
(f) Repair and Maintenance	618	1,911	2,670	3,258	4,062	5,031	6,018	6,882	6,954	9,642	10,290	10,305	10,305	10,305
(g) Others <sup>3/</sup>	346	1,004	1,312	1,519	2,012	2,495	2,519	3,285	3,989	4,414	4,630	4,535	4,535	4,635
Total	7,230	22,722	31,372	38,423	59,768	96,573	82,723	118,401	94,841	150,810	133,050	158,225	133,225	158,225
3. Income Before Debt Service	5,910	31,923	61,193	72,337	79,342	77,622	135,942	128,839	157,864	180,215	231,355	230,525	255,525	230,525
4. Farmer's Contribution <sup>4/</sup>	38,700	38,700	-	-	-	-	-	-	-	-	-	-	-	-
5. Interest (12%)	18,578	37,155	37,155	37,155	37,155	37,155	37,155	34,059	27,866	21,674	15,481	9,289	3,096	-
6. Loan Repayment	-	-	-	-	-	-	25,800	51,600	51,600	51,600	51,600	51,600	25,800	-
7. Balance after Debt Service	(51,368)	(43,932)	24,038	35,182	42,187	40,467	72,987	43,180	78,398	106,941	164,274	169,636	226,629	230,525
8. Accumulated	(51,368)	(95,300)	(71,262)	(36,080)	6,107	46,574	119,561	162,741	241,139	348,080	512,354	681,990	908,619	1,139,144
9. Value of Increased Stock	94,400	248,860	239,640	229,180	238,650	282,540	315,360	341,400	414,780	465,780	491,700	492,300	492,300	492,300

Notes:

- <sup>1/</sup> Additional improved pastures will be established by the sheep farmer, financed from current income.
- <sup>2/</sup> Refertilization after the fourth year is considered as operating cost.
- <sup>3/</sup> Includes taxes and contingencies.
- <sup>4/</sup> Farmer's contribution accounts for 20 per cent of a total investment of Col.\$ 387,000.

Livestock Development Project

Cash Flow of Incremental Costs and Benefits (Col.\$ million)

Year	1	2	3	4	5	6	7	8	9	10	11	12	13	14
<u>Beef Cattle Section</u>														
Incremental Sales <sup>1/</sup>	1.4	20.3	43.1	53.1	48.5	54.1	80.6	109.8	130.9	148.6	163.5	178.3	190.1	195.1
Operating Costs <sup>2/</sup>	1.0	3.2	6.3	9.0	12.2	14.9	18.0	21.3	24.4	26.3	27.3	27.6	28.0	28.1
Net Benefits	0.4	17.1	36.8	44.1	36.3	39.2	62.6	88.5	106.5	122.3	136.2	150.7	162.1	167.0
Investment Cost <sup>3/</sup>														
Assumption A <sup>4/</sup>	36.3	53.5	53.5	26.2										
Assumption B <sup>5/</sup>	42.3	62.3	62.3	30.5										
<u>Dairy Section</u>														
Incremental Sales <sup>1/</sup>	0.9	3.3	7.9	13.8	21.4	31.0	41.7	55.8	68.4	78.1	83.7	85.7	86.3	86.3
Operating Costs <sup>2/</sup>	0.8	2.1	4.0	5.8	8.0	9.9	12.1	14.1	15.8	17.0	17.7	17.9	17.9	17.9
Net Benefits	0.1	1.2	3.9	8.0	13.4	21.1	29.6	41.7	52.6	61.1	66.0	67.8	68.4	68.4
Investment Cost <sup>6/</sup>														
Assumption A <sup>4/</sup>	16.2	20.1	20.1	9.8										
Assumption B <sup>5/</sup>	18.9	23.4	23.4	11.4										
<u>Sheep Section</u>														
Incremental Sales <sup>1/</sup>	0.1	0.8	1.8	2.9	4.0	4.9	6.1	7.4	8.4	9.6	11.0	12.6	13.3	13.6
Operating Costs <sup>2/</sup>	0.1	0.3	0.7	1.1	1.7	2.5	3.0	3.7	3.7	4.4	4.6	5.1	5.1	5.3
Net Benefits	0.0	0.5	1.1	1.8	2.3	2.4	3.1	3.7	4.7	5.2	6.4	7.5	8.2	8.3
Investment Cost <sup>7/</sup>														
Assumption A <sup>4/</sup>	2.9	5.4	5.4	2.5										
Assumption B <sup>5/</sup>	3.4	6.3	6.3	2.9										

<sup>1/</sup> At prices to the producer

<sup>2/</sup> Including technical services after completion of investment period

<sup>3/</sup> Including contractors machinery and technical services during investment period

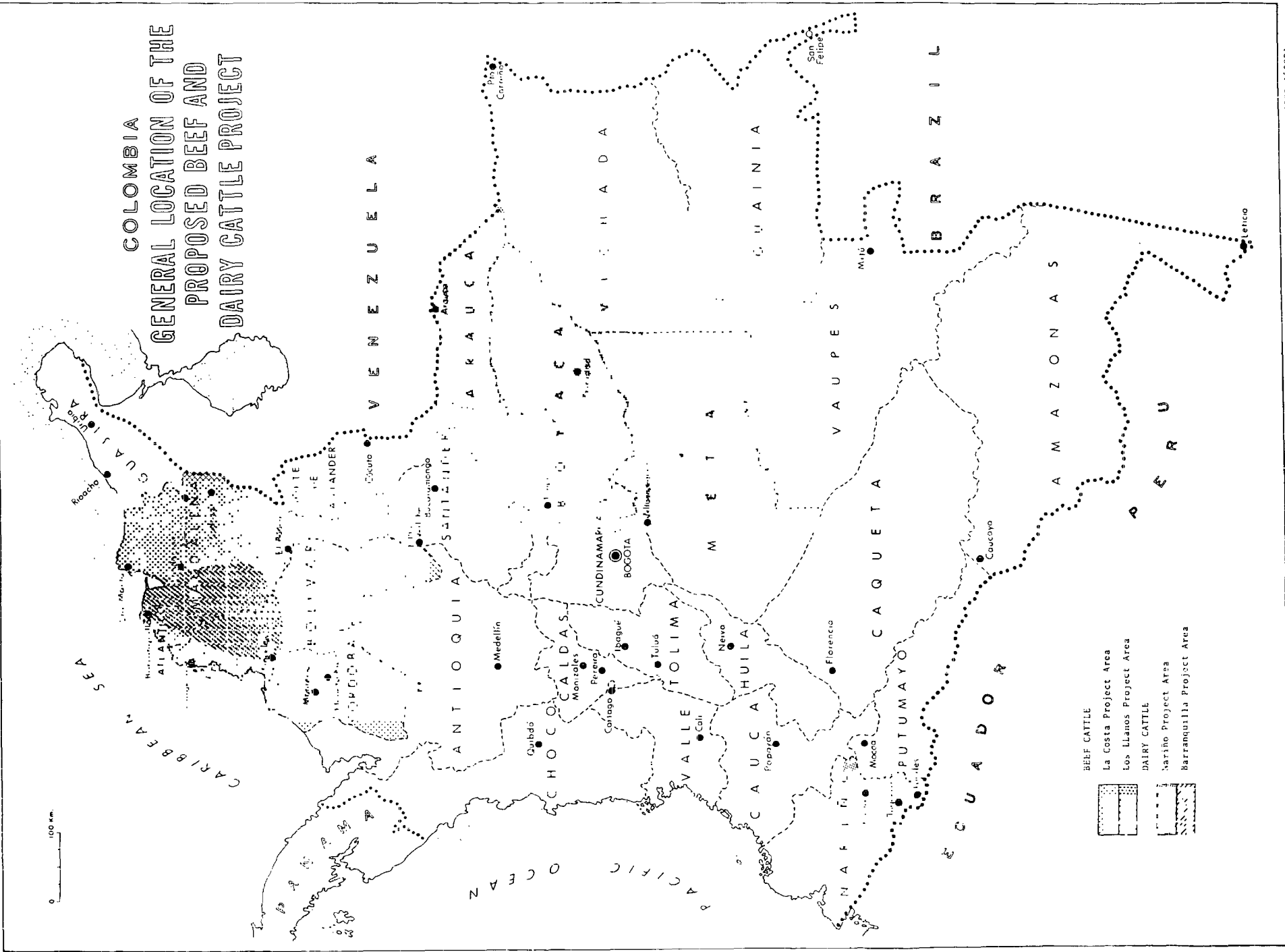
<sup>4/</sup> Based on prices at the time of appraisal when the exchange rate was 9 to 1

<sup>5/</sup> Based on an exchange rate of 13.5 to 1 for imported goods which account for about 33% of the total investment cost

<sup>6/</sup> Including investment costs of dairy cooperatives and technical services during investment period

<sup>7/</sup> Including technical services during investment period

# COLOMBIA GENERAL LOCATION OF THE PROPOSED BEEF AND DAIRY CATTLE PROJECT



0 100 km.



