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**THE FEASIBILITY OF PRIVATE INVESTMENT IN THE
INTEGRATED PRODUCTION OF CORN GRAIN, MILK
AND SWINE ON SMALL FARMS IN JALISCO, MEXICO**

April, 1969

Part I - Final Report

AID Contract csd/1467

**Project Title - Factor Analysis for
Accelerating Agricultural Productivity
in Less Developed Countries**

**To: Project Monitor
Agricultural and Rural Development Service
Office of the War on Hunger
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Washington, D. C. 20523**

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THE FEASIBILITY OF PRIVATE INVESTMENT IN THE
INTEGRATED PRODUCTION OF CORN GRAIN, MILK
AND SWINE ON SMALL FARMS IN JALISCO, MEXICO

Part I - Final Report

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PREFACE

The form of this feasibility report and its timing in relation to the establishment of hard facts, varies considerably from standard practice in presenting data as a basis for a judgment to invest capital.

But the project itself is different. It attempts to persuade private investors to venture into new and not fully mapped territory, wherein certain critical information does not exist in quantitative form . . . wherein risk must be taken in part on opinions, interpretations and projections which, however carefully and sensitively thought through, remain essentially qualitative and beyond testing until the investment proceeds.

Acceptance of the profit potential as being truly attainable depends on acceptance of the judgments made by the investigators that legal, cultural, social and political variables do interact with technical and economic factors as suggested. Such acceptance by investors depends on an understanding of the issues involved and how they have been analyzed and rationalized. Based on experience, it has been assumed that many potential investors who see this report will have had little direct experience with rural people in the underdeveloped nations, although their interest in helping them may be running high. For this reason, far more background and explanation has been included than is usually deemed necessary or useful in feasibility reports.

There is one other reason for the inclusion of so much editorial material. It is noted in the Introduction, to follow, that this feasibility report is but Part I of a two part final report to the U. S. Agency for International Development, covering what will be three years of field study by the end of 1969. Of a consequence, it is anticipated that the feasibility report will be widely distributed among development agencies and development specialists throughout the world as a reference work which sheds light on a new technique for rural-agricultural development. It is obvious that these people will find the report more useful and more readily adapted to their own locale to the extent that data and recommendations are supported by the considerations on which they are based.

INTRODUCTION - THE PROBLEM

Among the many factors which unquestionably could affect the rate of increase of agricultural productivity throughout the less developed countries of the world, Contract csd/1467 is specifically concerned with the role of private investment, particularly in the selected case wherein the capital derives wholly or in significant part from foreign sources.

In the original proposal to the Agency for International Development (AID), the problem was stated this way:

At a significant number of points scattered throughout Africa, Asia and Latin America, improved agricultural practices have been worked out by reputable research agencies which predict major increases in productivity on existing farmland, with traditional crops. These practices generally include a package of inputs integrating the benefits of improved seed, fertilizer, pesticides, proper soil preparation and proper timing. The capital inputs are obtainable at a cost subsumed by the resultant profit. The practices are within the capacity of small farmers to utilize them with but modest additions to their equipment and to their skills.

Despite clear-cut and impressive increases in productivity and profit predicted by these new practices, ranging up to fifteen and more times normal yields, and variously relating to corn, wheat, rice, millet and other basic foodstuffs, a conspicuous lag is evident in moving these practices into general application. The obvious profitability of the new practices has failed to stimulate the necessary flow of investment capital to bring them to fruition. This is contrary to what has happened in the United States, in Europe, in Japan, and, more recently, in Taiwan and Israel.

One major source of capital which has hardly been tapped and which must be made to flow into world agriculture is the private investor who up to now has largely been concerned with commercial, financial and manufacturing enterprise and who collectively controls vast amounts of money, manpower and know-how. It is imperative in the years ahead that these resources be applied to the

general attack on world hunger and rural depression, historically led by national and international public and private, non-profit agencies such as U.S.A.I.D., F.A.O., Ford and Rockefeller Foundations, among literally hundreds of others.

Of course, there are already hundreds of millions of dollars invested for profit in agribusiness around the world, by others than farmers . . . in plantations, in food processing plants, in marketing organizations and in the manufacture of farm machinery, fertilizer and pesticides. These are important. They lead the way. But they simply are not adequate to meet the capital needs of world agriculture if world hunger and rural poverty are to be overcome.

Indeed, it is in the very size of the investment needed in agriculture that the problem arises. When we observe current investment from "off-farm" sources, foreign or domestic, in food related enterprises scattered throughout Africa, Asia and Latin America, the amount of money and its impact on total food supplies or on social and economic development, is relatively small. With occasional exceptions, this investment is tolerated even by governments in the midst of revolutionary agrarian reform movements. This is especially true where the companies involved are conspicuously extending supervised credit, training, offering growing numbers of jobs and otherwise make recognized contributions to local and national development.

However, when we look to the future and envision the investment of billions of dollars every year, touching the lives of millions of small cultivators and their families and communities, an issue of great political significance emerges. Will this investment be regarded as exploitation? Will it seem like a retreat from agrarian reform and the revolutionary march toward social justice? Can profit and foreign capital be benign forces in the surge toward a better life?

To be realistic, it can only be concluded that if the profit potential in improved agriculture around the world is to serve as a catalyst to the large-scale private investment needed, a new kind of institutional form for such investment must evolve. No matter how pressing the problem of hunger, large amounts of private capital coming from others than farmers, often from foreign sources, often destined for use on the land and always calling for a profit, will be rejected unless profit and free-enterprise can be made recognizable and believable as revolutionary instruments with which national aspirations can be achieved.

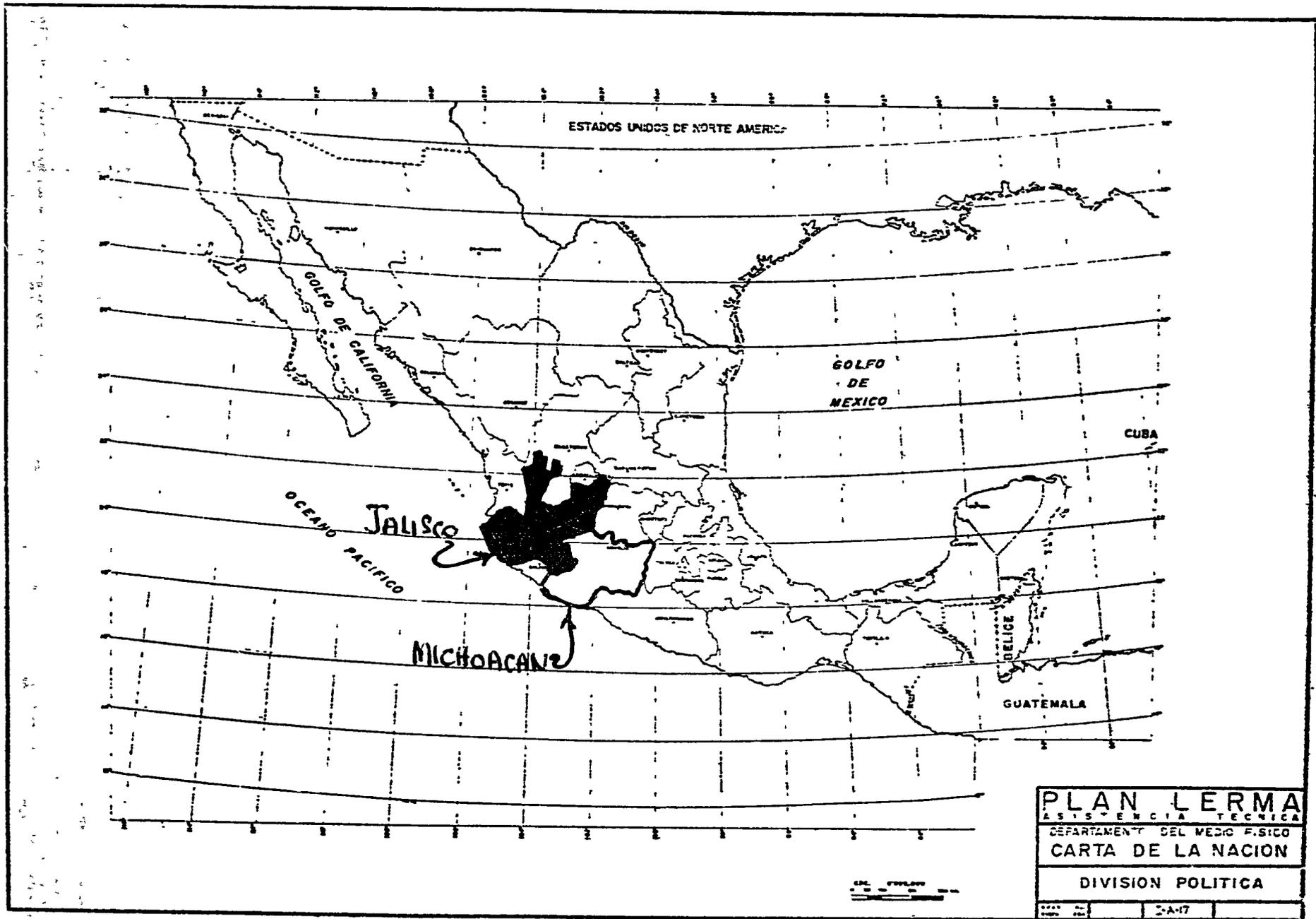
The problem, then, is this: Within the varying conditions of crop, social and political organization, and the state of technical and economic development which characterize the developing nations, can the obstacles now interfering with the flow of large amounts of private capital into world agriculture be overcome by creating novel institutional forms by means of which a harmony can be found between investor, farmer and national interests?

The first step toward the solution of the problem so stated, it was agreed, must be the working out of a methodology by means of which investable projects can be isolated in a practical way from the massive, complex, subtle, confusing and often irrelevant aspect of the agricultural sector of any country. Working out such a methodology has, therefore, been the primary objective of the work done in Mexico under the contract with AID. This will be covered in Part II of the Final Report, to be submitted later in 1969.

However, as a device to bring all relevant variables into a coherent but generalized system of inquiry, a specific project was conceived and located in Mexico, to serve as a model or prototype of what might be accomplished anywhere else with a minimum of alteration. It is true that Mexico differs in fundamental ways from many other less developed countries. Its government and currency are stable. Inflation has been kept under control. There is a dynamic interaction between the economy of Mexico and that of the United States. Yet, in terms of model building, the poor, traditional agricultural areas in Mexico reflect just about all of the cultural, financial, political, legal and technical barriers to progress that characterize countries the world over and for

the conveniences the location offered there seemed no reason to avoid Mexico and favor any other site. Be that as it may, the model, as might be expected due to its specificity, has come into clear view as an attractive investment even before it has been possible to completely refine and precisely describe every step in the general method of inquiry. Upon reflection, there seemed to purpose to delay in presenting the model to potential investors. Indeed, it seemed highly desirable to encourage investor interest in this type of project, in anticipation of broader application of the method of project identification soon to be made available. Thus, Part I of the Final Report covers the investable character of the model and Part II the method of inquiry, even though at first glance this seems the reverse of a natural sequence.

It may be observed that investment promotion of the model is proceeding as a follow-up program but independent of AID support. On the other hand, AID is continuing to support, through 1969, the work required to refine and spell out the last details of the methodology referred to above.

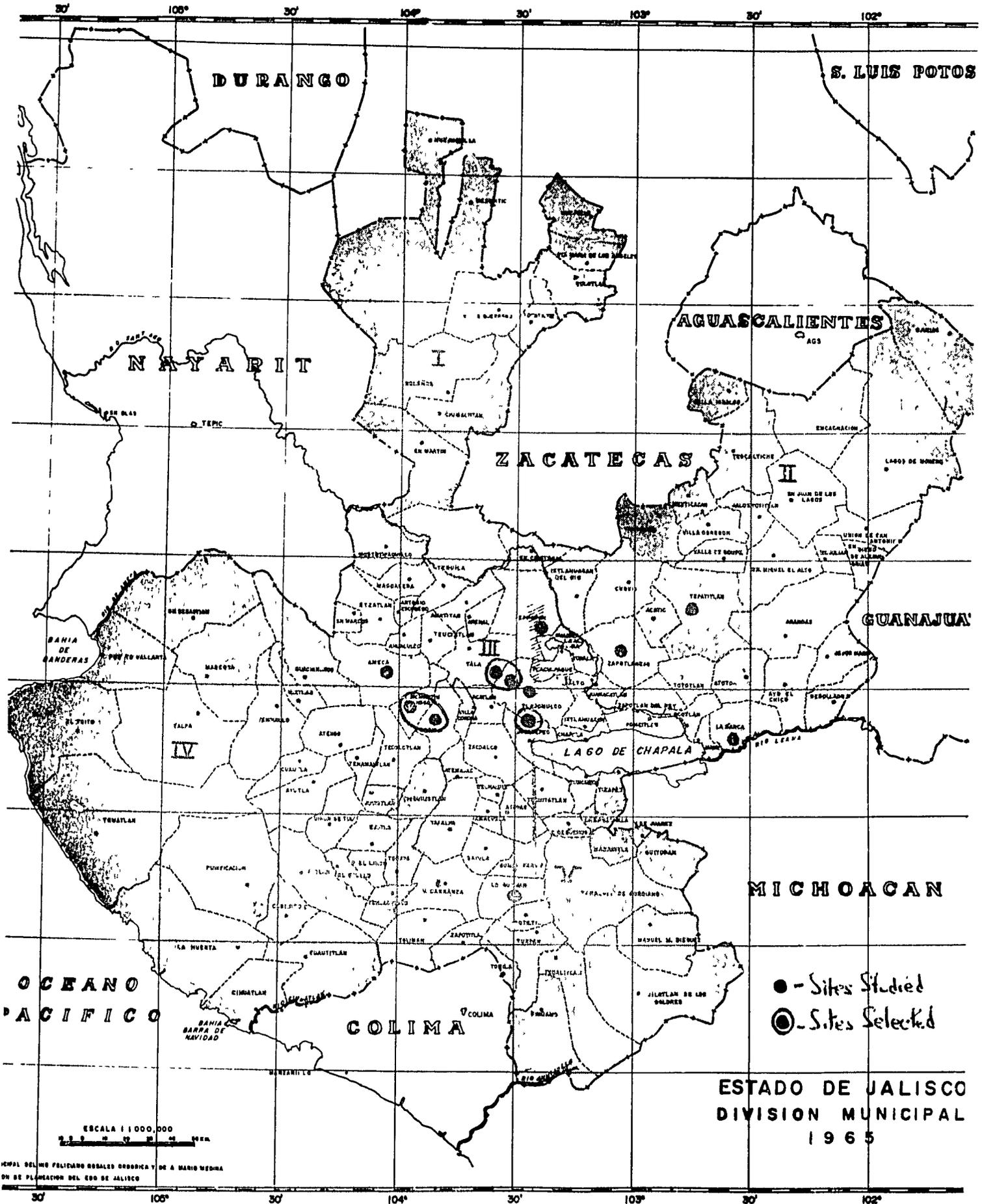


PLAN LERMA
ASISTENCIA TECNICA

DEPARTAMENTO DEL MEDIO FISICO
CARTA DE LA NACION

DIVISION POLITICA

2-A-17



DURANGO

S. LUIS POTOS

NAYARIT

AGUASCALIENTES

ZACATECAS

GUANAJUA

MICHOACAN

OCEANO PACIFICO

COLIMA

- - Sites Studied
- ⊙ - Sites Selected

ESTADO DE JALISCO
DIVISION MUNICIPAL
1965

ESCALA 1:1,000,000

MAPA DEL INO FRANCISCO ROSALES ORDOZCO Y DE A MARIO MEDINA
DIRECCION DE PLANEACION DEL EDO DE JALISCO

30' 106° 30' 104° 30' 103° 30' 102°

Chapter 1

THE GENERAL CHARACTER OF THE PROPOSED ENTERPRISE

The project described in this feasibility report is a pioneering joint venture in rural development by private investors from the United States and Mexico. In broad outline, the project (hereafter called the Model) has this form:

1. It will be a stock corporation. Initially, the farmers involved own no stock which is to be 100% subscribed to by off-farm investors. Investment will be \$960,000; equity will be \$460,000. Shareholding will be roughly equal as between investors from the United States and Mexico but majority investment by Mexicans will be favored.
2. Control of management will rest with the original shareholders. Through the device of a Trust, a portion of after-tax profits will be utilized each year to buy out the original investors and so bring about an orderly transfer of ownership to the farmers in the project.
3. The Model will provide technical assistance as necessary and will organize and administer a closely supervised crop season credit system in order to facilitate the change from traditional farming to a modern diversified agribusiness enterprise.

4. The products of the Model will include corn grain, raw milk and live hogs, primarily, and some animals as a secondary product of the dairy. With respect to corn, the Model will not own land but rather will manage production and marketing by means of contract arrangements with farmers. In this way, the Model does not become involved with the land tenure system nor with any of the emotional and political aspects of land reform.

For the life of the Model as projected in Chapter 4, no mechanization of grain production is planned. Farmers, of course, may choose to buy tractors and other equipment and, if so, will be given the best counsel the Model technical staff can offer. However, it is a cardinal policy of the Model, as a prototype for general application, to avoid displacing the labor of the farmer or, at least to move very slowly to this end, lest serious social disruption occur. If mechanization is ultimately necessary to protect and to maximize income, then the shift should be coincident with the shift to ownership by the farmer of the instruments of capital which replace his labor.

In the case of the Model, the new high yields of grain are achievable without mechanization. Indeed, there is no evidence that the cost of tractors can in any way be justified. The Model imputes no value to the labor of the farmer. This labor has no alternative use. The farmer is treated as the owner whose return is embedded in the net price he receives for his surplus. Moreover, by avoiding mechanization and the need to aggregate land into efficient-sized units, the Model becomes independent of the choice of individual farmers to opt in or out of the system. Every farm plot is a sufficient, self-contained part of the operation.

It may well be that in the evolution of Model operations, a two crop system may prove feasible. At this time, power, in the quantity and speed required, may demand the use of tractors. This decision will, of course, depend on a new cost/benefit calculation. Suffice it to say that in the beginning, the corn practice does not require the investment; and, it would not be a desirable move from a social viewpoint.

Contrary to the labor intensive approach of the grain operation, the dairy and swine enterprises will be designed as modern, capital intensive systems, the aim of which is to maximize their profit and to keep them as competitive as possible in the marketplace. Some local people will be employed but the objective is to bring about a diversified agribusiness complex which eliminates total dependence on farming and provides means of steadily broadening the base of income.

5. The amount of stock which is transferred gradually to the ownership of each farmer will be determined by contribution to profit. Since every farmer will be a corn grower, contribution to profit will be based on the amount of grain each farmer sells to the Model each year. The assets of the farmers, as symbolized by the stock held in their names by the Trust, will not be saleable nor will they be offerable as collateral against loans. If a farmer dies or voluntarily withdraws from participation in the scheme, the Model will purchase whatever quantity of stock has been assigned, at current value and then will make these shares available to the remaining farmers.

6. Until final transfer of ownership to the farmers takes place, the original shareholders may sell their stock, with first call being given to the other current shareholders. New shareholders, to the extent possible under the law, will be approved by the Board of Directors to help ensure continuity of policy.

The Model is shown to be attractive from a profit viewpoint. However, the objective of profit is frankly subordinate to the objective of generating self-sustaining economic development in a rural area which can be said to typify the problems of peasant agriculture the world over. The availability of profit, therefore, while regarded as a basic requirement of the Model . . . as a means of justifying the flow of private capital and management into the venture . . . is of less significance than is the test of the proposition that capitalism can play a vital role in the general attack on the so-called "world hunger crisis".

To understand the reasons why the Model takes the form it does, it may be helpful to review the background out of which its specific design arose. This background came into view after several years of grappling with problems defined in the Introduction and may be sketched as follows. *

The heart of the experiment is conceived to be a mechanism which pumps private capital from outside into selected rural areas, to establish profit-making ventures free of public subsidy and within the food supply system. Conceptually, the role of investment capital is envisioned as one which catalyzes the creation of self-sustaining agribusiness enterprises; which increases food supplies which simultaneously

* The search for an innovative approach to the use of private capital, invested at a profit, in the stimulation of food production and rural economies began in 1964, with a grant from the International Minerals and Chemical Corporation of Skokie, Illinois, which carried the inquiry into all parts of Africa, Asia and Latin America. The concepts which emerged from this work and which are summarized very briefly in Chapter 1 of this feasibility report, may be examined in greater detail in three publications by Simon Williams: Private Investment in World Agriculture, Harvard Business Review, November-December, 1965; Essentials for Private Investment in Agricultural Development, Proceedings of the First International Agribusiness Conference, Chicago Board of Trade, 1967; and, Popular Capitalism, A Selective Route to Agricultural Development, International Relations, Journal of the David Davies Memorial Institute of International Affairs, London, England, April, 1969.

increasing distributable wealth and ensuring a broad base of wealth sharing; and, which ultimately administers the orderly transfer of ownership and management from outsiders to the rural people involved.

The work began as part of a search to find an answer to this question: What can private, profit-making corporations do, more directly than in the past, to accelerate the application of existing and improved practices of growing, harvesting, conserving and distributing foodstuffs, throughout the hungry areas of the world? The question was deemed important by those who asked it because of a deepseated concern with the so-called "world hunger crisis".

This concern sprang from several sources. For some years, out of humane considerations primarily, United States agribusiness firms had been giving of their resources, in a very sparing way, to public agencies dealing with the problem, e.g. gifts of fertilizer, occasional grants of money for research and training, and, sometimes, technicians, management personnel and technology to be put to work on a specific overseas project. But awareness grew, as public discussion of the issue became constant and widespread, that charity was at best an inadequate and at worst an irresponsible gesture.

In facing the query, what more is there to do, management had to reckon with several facts. One, with the exception of a limited number of companies, few corporations knew enough about the realities of the world hunger situation to deal with it creatively and on a large scale. Two, what was known flatly stated that whatever the means used, greater participation meant a deep involvement in the social, cultural and political aspects of life in a host country. This carried with it somewhat frightening implications. Three, it was not necessary to measure precisely the magnitude of the problem to realize in advance that the amount of money needed for agricultural development around the world was immense and that if this money was going to be found, the larger share would of necessity have to come from the United States. What should--what could the share of business be in light of prior commitments and management responsibility to stockholders?

It was necessary early to come to grips with the issue of "crisis". Both the analysis of the problem and the planning of appropriate new action were, and remain, affected in fundamental ways by the view held as to the nature and, indeed, as to the reality of a crisis component in the matrix of variables to be rationalized. Several conclusions were soon drawn. First, it became unquestionable that a critical situation does exist. No statistical device can

average out of being the millions of underfed people readily seen in the cities and countrysides of the world. No quibble over the meaning of starvation or malnutrition can wash away the disease and suffering of the hungry. Second, it was concluded that hunger alone, appalling as it is in magnitude and quality, is not, nor will it be, decisive in generating an adequate response to the emergency.

By themselves, hungry people arouse compassion and generate crises in terms of localized misery. They may stir philanthropic action, sometimes on a large scale as, for example, the Food For Peace grain exports from the United States to India and other countries. These programs may alleviate but they do not eliminate hunger. Furthermore, they tend to decline with time for political and economic reasons and because beating one's breast over the pain of others is a tiresome exercise. The hungry may inspire heights of oratory and may illuminate the pathway to transient political power, but, so far, these are responses without serious impact. Hungry people who are not violent in their search for alternatives simply do not seem able to generate the kinds of crises that demand and receive attention. Without a recognized threat to personal security, those who "have" remain singularly indifferent and uncommitted to sustained action on a meaningful scale in the interests of those who "do not have".

Herein, it was decided, lies the crisis. The hungry people of the world are no longer prepared to be passive. Their plight has become the heart not only of political demagoguery but, as well, of violent politics. Their response to revolutionary appeal has become sweeping, universal, angry, threatening and enduring. In observing the actual and potential upheaval of the hungry, in one's search for an adequate response, it is clear that hunger is but one side of the issue. Hunger is always the partner of economic and social depression. Feeding people is not enough. The entire quality of life among the hungry and poor must be elevated if those concerned with peace and world security would develop a powerful counterthrust to revolution and warfare. Yes, it was concluded, there is a crisis related to hunger, but feeding alone will not remove it. Whatever is done to bring about more food where the hungry are, must, as well, bring about economic growth among these people. They must become convinced through practical experience that there is an alternative to violence in the search for a life worth living.

Looked at this way, it is apparent that however important it may be judged to be, the traditional form of private investment in the agribusiness sectors of the underdeveloped countries is not adequate in a political sense. This is not

meant to derogate the value of such investments which should continue to be made on an even larger scale. Enterprises which provide better seed and animal stock; store, process and distribute food; make available modern technology in the form of agricultural chemicals, chemicals for animal health and machinery; enrich the diet with synthetic amino acids, proteins, vitamins and other additives; open up new sources of food as by culturing bacteria on petroleum-based substrates and by aquaculture; among others, play vital role but one traditional to capitalistic enterprise. They tend to be capital intensive. They distribute to, rather than share with, those in the agricultural sector. Their interface with the people tends to be with a limited number of employees, a limited number of suppliers of material and service and a limited number of customers who have already begun to emerge from a state of subsistence. Except indirectly, such enterprise is deliberately nonpolitical and does not engage itself directly with the problems of rural peoples.

Thus, in addition to its more traditional approach to investment, if private enterprise is to participate seriously and directly in the attack on the hunger-depression-political instability problem, some significant amount of capital and management must be allocated to rural sector investments wherein the objective is not only to increase food supplies but, as well, is to create locally-owned wealth-producing institutions which: a) increase income in the rural areas; b) provide a diversified means for such income to increase in time; c) offer incentives to people to protect and nurture the enterprises created, e.g. be becoming owners and managers; d) offer incentives to those with superior capacity to reach ever higher in aspiration and performance; and, e) conserve scarce public resources for infrastructure construction.

In reckoning with a thrust into rural development, private enterprise must accept the fact of land fragmentation and the difficulties this raises in maximizing raw material production and distribution efficiencies. There is no looking back, where, through tradition or agrarian reform, small-scale agriculture is a way of life. There is no stopping the trend toward parcelling out the remaining arable tracts of land (or those which will be reclaimed from the deserts and jungles in the future) in small units, in the face of population and political pressure. The challenge lies not in changing land tenure systems but in dealing with them; not in wasting energy passionately wishing that small-scale farmers and ranchers did not exist but in applying managerial talent to aggregating their resources to a profitable end.

While not all investments in rural development need be land based, they will be land related and will be involved ultimately with poor people. Yet, to be realistic, private investment, by its inherent character, must yield a profit. Without a profit, the use of private capital becomes philanthropy and philanthropy, as has been noted, is not to be depended on, in size or continuity. To make a profit in the marketplace of the poor and hungry will seem to many to be despicable; to revolutionaries it will seem abominable; and, to politicians it may seem intolerable. Does this create an impasse? Maybe. Not necessarily. It depends on whether or not investment for profit can be convincingly demonstrated to be a revolutionary means of achieving social and economic reform.

Thus it is that the project in Jalisco is shaped to demonstrate the dramatic impact on rural development which private investment can effect and why it is said that profit which returns to investors is a means, not an end. Too, because any rural development project is bound to be deeply involved with the totality of human organization in a host country, the feasibility of the enterprise in Mexico was judged not only in traditional economic terms, but, as well, in terms of national policy, law, political opinion and the culture of the people to be integrated into the scheme.

One final introductory comment about the Mexican project must be made and should be kept in mind at all times. As a demonstration of a new role for private enterprise in rural development, it is a coincidence that corn, milk and meat were selected as the product base of the proposed corporation. Corn was chosen on the basis of existing research data, authoritative but unapplied, which predicted striking increases in yield. Milk and meat were chosen on the basis of market analyses integrated with the fact that the production of both was not strange to the culture of the people to be involved. When it became clear that an economically attractive project could be built around these products, no further

complications were deemed desirable since the end of the experiment is not conceived as a particular product line but rather as a new corporate form of agribusiness enterprise.

Further, the proposed corporation is not intended to be peculiarly Mexican or necessarily to be the starting point of a program of rural development in Mexico. As a model, the Mexican Government will have the opportunity to observe its structure and its utility to the nation; so will other nations be made aware of the project and evaluate it in terms of national objectives. For this reason, the rationale of the work done in Mexico does not deal with the implications for the nation of success and the multiplication of the prototype throughout the country which could raise larger problems, as, for example, those relating to marketing. All this is left for future study; for now, the emphasis is on the design and implementation of an organization to do a particular job in a particular way.

Chapter 2

THE SITE

The maps and photographs on the following pages locate the site and illustrate a bit of its character.

The most significant features of the area may be summarized as follows:*

1. The site lies roughly 27 miles south by southwest of Guadalajara, a city of 1,300,000 people and the natural market to be served. A paved highway traverses the area. This highway (Federal Highway 15) is a main artery connecting Mexico City with northwest Mexico.

2. The site forms a valley completely surrounded by mountains. There are approximately 6000 hectares (1 hectare equals 2.47 acres) under cultivation. There is no irrigation. Rainfall averages between 700 and 800 millimeters annually (31-35 inches) and is concentrated during a period from early June through November, although it may rain at any time.

* In Chapter 3, Part III, the cultural aspects of the people living in the site area are discussed insofar as their actual and anticipated behavior, as well as their social organization might be expected to influence project success.

3. The farmland of the valley is predominantly operated under the "ejidal" land tenure system of Mexico. Under this system, farmers do not own their land. Rather, the Federal Government retains perpetual title and assigns the rights to given amounts of land to communities of rural people. These communities are called "ejidos"; members of an ejido are called "ejidatarios". Others may live in an ejido; such people are almost always members of the families of ejidatarios, but they do not have land to farm. After an ejido receives land rights from the Government, the elected leadership of the community assigns parcels to its members. An ejidatario may not sell, rent or mortgage the land assigned to him; the rental restriction is commonly violated and such violations are commonly overlooked. Except for these restrictions, the ejidatarios in the valley are free to operate as they choose. They decide individually on the crop to grow, the practices used, financial arrangements and marketing methods. They may enter into contracts for credit; they can legally submit to management; they can agree to market through specified channels.

4. There are three villages in the valley itself; ejidatarios from a fourth community lying outside the physical limits of the site have rights, as well. The total population affected by the Model is approximately 5000.

5. The average amount of land farmed is 8 hectares, usually held in two 4 hectare plots which may be widely separated. One plot is always said to be on poorer soil than the other. Some 608 farmers have rights to what would be called the prime land in the valley. Others may have parcels around the edges and up the mountain slopes. The farm families and others who live in the valley are concentrated in villages; farmland is thus more or less continuous, free of buildings or a major clutter of fences.

6. The economy is based primarily on corn which all farmers grow at one time or another. In varying amounts, from year to year, sorghum may replace corn. During the winter months, chick-pea may be grown, usually on that part of the land which has not been used that year for corn, although some farmers double crop. Animal power is the primary source of energy used in farming but a few tractors are to be found which hire out their services, particularly for land preparation in the corn cycle.

7. Power and telephone lines traverse the site. Electricity is available in the three on-site villages, two of which have deep wells and potable water pumped to taps along the streets and, occasionally, directly into houses. There is no water for irrigation but good sources of underground water have been located.

Chapter 3

BASIC ISSUES AFFECTING SUCCESS

The proposed corporation has no exact precedents in Mexican experience, nor, insofar as it has been possible to determine it, in the experience of any other of the less developed countries.

Therefore, before presenting the capital requirements and the financial results expected of the Model, it is well to anticipate the range of basic questions bearing upon the success of a venture of this type and to indicate the answers obtained during two years of feasibility analysis. The issues involved are these:

- I. Is the Model legally Acceptable?
- II. Is the Model politically acceptable?
- III. Is the Model acceptable to the farmers and can farmer cooperation be assured?
- IV. Is there a sound procedure for the transfer of ownership to the farmers? Can continuity of corporate policy be ensured in the interim? Will the farmers be competent to take over?

- V. Are there tax exemptions available to reduce risk? Are other incentives offered to encourage private capital to flow into agricultural development?
- VI. Is local capital available, and under what terms, for equity participation and for long term financing?
- VII. What is the nature and magnitude of the short term (crop season) credit system required to finance the improved corn production practice? Is short term financing available to cover the amount of credit needed? How can the risk attendant to the short term credit system be kept at an acceptable level?
- VIII. Is there a stable market for the products of the Model which allows for reasonable predictions of both sale and price?
- IX. Is management available?
- X. What are further diversification possibilities?

Chapter 3 - Part I

IS THE MODEL LEGALLY ACCEPTABLE?

As a stock corporation, the Model would interact with Mexican law in numerous ways which are perfectly normal to business enterprise and which present no unusual circumstances requiring elaboration in this report. However, the Model is a pioneering venture in agricultural development and it was felt that a legal opinion was necessary on three special aspects of the operations of the Model, namely:

1. Can a stock corporation such as the Model operate within the general field of agribusiness with a base in the management of both farming and marketing practices of Mexican campesinos?

Throughout the less developed countries of the world there is great sensitivity to the possible exploitation of peasants; this is certainly the case in Mexico. Central to this feeling are the traditional, cultural, insistent demands of rural people for land...land owned preferably but at least land to live on and work, and the persistent fear of a new colonialism brought on through land acquisition on the part of national and international monied interests. The thrust of agrarian reform everywhere is to ensure that all the land suitable for farming, ranching and forestry is held by the native population, with an emphasis on the rights of the smallholder.

The Model takes cognizance of this powerful, driving, political force. It is a matter of basic policy that the corporation own no farmland but, instead, that it concentrate its efforts on land management as an adequate and acceptable way to introduce modern practices into an area of traditional agriculture. But beyond known legal, emotional and political prohibitions on land ownership, the Mexican constitution and current law are highly protective of farmers in many other ways and the question asked above called for careful and scholarly legal investigation.

2. Even if a stock corporation like the Model can legally relate itself to agriculture, in the general sense, would the fact of dealing with ejidatarios raise any special problems?

The Mexican Government is especially paternal as regards the communal farmer, the landless peasants of the past who were at the heart of the agrarian revolution of 1910. The Agrarian Codes spell out a variety of freedoms and restrictions affecting the behavior of ejidatarios and institutional form for the administration of ejidal affairs is complex. When the idea of the Model was conceived, there was no clear intent to reach for or to avoid engagement with the ejidal land tenure system. As it turned out, reality dictates that if one is going to relate to rural depression and traditional agriculture in Mexico, as a case reflecting similar conditions in other countries, then the ejidatario simply can not be avoided. Thus, the question.

3. Is it possible to implement the plan recommended to effect the orderly transfer of ownership from the original investors to the farmers?

The procedure being planned is explained in detail in Chapter 3 - Part IV, to follow. It will be seen that in addition to the subtle problem of relating the Model to the Mexican Constitution, the Agrarian Codes and other legal restraints on agricultural activity, the transfer of ownership brings the Model into contact with Trust law in a somewhat novel way.

With the foregoing in mind, a leading legal firm was retained to analyze all aspects of the plan of the Model and to provide an authoritative opinion. After considerable study, an opinion was offered and is stated in full, below.

We refer to your request for a legal opinion on the feasibility of applying your Model Program for Economic and Social Improvement of Agricultural Communities of Small Scale Farmers, through an integrated corn grain, milk and swine production venture in Jalisco, Mexico, with private capital investment.

The legal structure designed for this venture, described in our memorandum of February 8, 1968, and in your Tentative Investment Prospectus "The Feasibility of Integrated Corn Grain and Milk and Swine Production in Jalisco, Mexico", of April 15, 1968, may be summarized as consisting of a stock corporation (the Model) which will operate directly a dairy farm and swine operation, and will lend technical and economic assistance to farmers, with the contractual obligation of the farmers to repay the loan plus commercial interest, and to market their crops through the Model, with a profit margin for the latter. The charter and by-laws of the Model will provide that a specific percentage of its

profits will serve to set up a fund, that will be entrusted to a Mexican fiduciary institution (a bank) which will invest it and use it over a specified period of time to buy out the original investors (or their assignees) and turn over the Model to the farmers concerned.

The General Constitution of the Republic of Mexico, its Organic Law and regulations thereto, forbid stock corporations from engaging in direct agriculture or from possessing or owning land for agricultural purposes; however, they have no provisions limiting the operation of dairy farms and swine operation by stock corporations. Since the Model will not farm nor own or possess agricultural land, and since there are no limitations to its dairy and swine operation, the Model may lawfully engage in said activities.

The incorporation and operation of the Model will be subject to the General Law of Business Organizations, which does not have provisions limiting the possibility of the contemplated operation, nor the possibility that the charter and by-laws of the corporation may stipulate that part of its profits will be devoted to set up the trust fund for the benefit of the farmers who operate with the Model and who will eventually own it, allowing the intended limited participation of the farmers in the administration of the Model, before they take over the company.

The contracts between the Model and the farmers may also be legally entered as intended. Ejidatario farmers are limited by law from disposing or transferring the title or the use of their agricultural land. However, they may freely agree on loans and services for their agricultural activities, pledging their crops to guarantee payment, and agreeing to market their crops through a given company. Also, there are no legal provisions that we know of which may prohibit Ejidatario farmers from being members or stockholders of companies or corporations.

The trust contract between the Model and the fiduciary institution will be governed by the General Law of Negotiable Instruments and Operations of Credit, which has no provisions that may prevent the setting up of the trust fund nor the performance by the trustee.

Although the general structure of the project is more complicated than an ordinary commercial operation or a normal non-commercial social project, we believe that the structure designed for the Jalisco venture, referred to above, can be followed and operated within the legal provisions governing the various fields involved, whereby it is our opinion that the project may be regarded as a feasible project from a legal standpoint.

Chapter 3 - Part II

IS THE MODEL POLITICALLY ACCEPTABLE?

Political acceptance of the Model can not be guaranteed in advance. There are reasons to be optimistic, as will be enumerated below. Final acceptance, however, must await the actual existence of the Model. The corporation must be formed, as it can be at practically no cost. It must then be activated, as it can be during the first full year of operation with a very small fraction of the total investment planned (roughly 7%). Then, and only then, can the political leaders of Mexico be asked to respond in an unequivocal manner.

The reasons to be optimistic are these:

1. In the fall of 1966, at the time the research contract was being negotiated between AID and the International Marketing Institute, Fulton Freeman, then U. S. Ambassador to Mexico, asked that before the contract was signed, the Mexican Government signify its approval to locate the project in their country. After considerable discussion and with the guidance of a group of Mexican businessmen and professionals (both Mexican and U. S.), letters of welcome and approval were obtained from the Federal Secretary of Agriculture and Livestock and from the Governor of the State of Jalisco, where, even then, it was apparent that the site would be located.

It must be granted that at that time, the Model could only be described in general terms. Nonetheless, it was described in sufficient detail to make absolutely clear the intent to engage in a profit-making, profit-sharing venture with campesinos, utilizing private capital from Mexican and U. S. off-farm sources.

2. During the spring and early summer of 1967, a quiet, wide-ranging inquiry was made among people high in the political hierarchy of Mexico (but not currently holding office in the Government--it was felt that those in office would feel constrained to express themselves overly cautiously and what was being sought was a knowledgeable and very frank analysis of political trends and the locus of power). The relevant conclusions to be drawn from this survey are these:

a. There is no question that among the top echelons of political leadership in Mexico there is a genuine desire to better the lot of the ejidatario. At the local level, however, a disturbing array of vested interests has been created with a formidable stake in maintaining the status quo. Those charged with delivering bodies for political activities and votes at election time have a vested interest in a docile and obedient electorate. Land tenure uncertainties and other weaknesses of the ejidatario that can be played upon, provide fairly solid assurances in this regard. Too, the renting of land, the purchase of ejidatario rights and sharecropping arrangements, all of which are outright illegal, are today widely engaged in by a well-to-do and influential (locally) class of entrepreneurs who would view with antagonism any threat

to their interests . . . as would local money lenders, merchants and others who have a stake in maintaining the present inefficient workings of the ejidal system. Thus, it was emphasized, while one can conclude it is politically feasible to utilize privately financed, privately managed companies to increase the productivity of ejido holdings and to increase the income of ejidatarios, it would be of fundamental importance to have overt, top level support in both the political and official sectors.

b. "A continuing problem in Mexico", wrote Harold F. Cline in 1963 in his book, The United States and Mexico, "Is to achieve some stable equilibrium between agrarianism and agrarian reform, two quite different matters. The one, agrarianism, is essentially political and social. Dividing the land among the landless who want and can utilize it, fulfills an old Revolutionary dream and promise. Agricultural reform, on the other hand, seeks to use Mexico's rather limited resources most effectively so that the rural sector becomes both a widened consumer market and a steady supplier of crops needed to feed a booming industrial system and an expanding population. Agricultural reform tends therefore to be economic and technical."

The problem is still unsettled and is likely to remain so for a long time. True, the pendulum is unlikely to swing as wildly as it did in the time of President Cardenas but, movement to both the left and right is still observable and the pros and cons of the social and economic objectives of agricultural policy continue to be debated in both the political and economic spheres. In the current struggle for power, those who

stand for agricultural reform as distinct from agrarianism have been so successful in increasing agricultural output that they have built strong defenses around their main positions and it may safely be said that present Mexican policy emphasizes the thrust toward increased productivity and rural economic development. However, it was recommended that it would be far simpler to gain the support of top level political and official organizations if in all ways possible the Model was dominated by Mexican capital and Mexican staff.

c. In essence, the survey made in 1967 revealed no obstacles of an insurmountable nature to gaining political acceptance for the existence of the Model in Mexico. Difficulties were defined but in every instance the presentation of a problem was accompanied by a suggested solution. Further, none of the solutions commended for consideration were beyond rationalization into the structure of the Model.

It may be noted that no facts have emerged in the interim between 1967 and 1969 which would outdate and make irrelevant the guidance obtained.

To the contrary. There is increased public attention being focussed by the Government on the need to increase production and to stimulate economic growth in the agricultural areas of the country. Too, as land available to distribute to the campesinos is dwindling, emphasis is being placed on both public efforts to increase yields and diversify production and private sector activity to this same end.

3. Pursuant to the insights gained by the survey, ongoing contacts have been maintained at all key points, using more and more hard data about the structure and potential performance of the Model both as the

excuse to talk and as the means of testing and retesting for political sensitivity. These contacts have included the Secretary of Agriculture; the Governor of the State of Jalisco; the Sub-Director of the Bank of Mexico (the Central Bank, which also administers the major agricultural credit system in Mexico, the Fondo de Garantía y Fomento para la Agricultura, Ganadería y Avicultura); the Director of the central agricultural bank, the Banco Agropecuario; Directors of all major private banks; and, selected business leaders. In addition, at the state level, the local heads of every institution liable to interact with the Model have been kept advised of progress. These include, besides the office of the Governor, the State Department of Economic Development; the regional office of the Ejidal Bank; the state office of the Federal Ministry of Agriculture and Livestock; the state office of the League of Agricultural Communities (which represents the affairs of the ejidos); the regional offices of the National Agricultural and Livestock Insurance Company, the National Seed Company and the National Fertilizer Company; the state office of the Ministry of Water Resources; among others.

In no single case has opposition been expressed. To the contrary, every kind of cooperation has been extended, in the form of vehicles on loan, personnel on loan, maps, reports, data, introductions across government agencies and counsel relative to every aspect of the design of the Model and how to make it fit the Mexican scene. While it is always easier to get agreement in general than agreement in particular, it is impossible to push aside a sense of encouragement that support will be forthcoming when and if it is needed.

4. A fact which has helped win such approval as has been given and held out for the future, and one which has been consistently stated at every hearing is this: the Model, while it is to be sited in Mexico, is not intended to be a uniquely Mexican project. Rather, it is a prototype of a new kind of rural development enterprise, which, if successfully put into operation, is meant to be adapted to the agricultural sectors of all of Latin America, Africa and Asia, in due course of time. The prototype had to be constructed somewhere. Mexico was chosen. But the Model, it has been repeatedly emphasized, is not to be construed as being a part of any formal plan for rural development in Mexico. In this sense, Mexico is merely the host, not the sponsor of the scheme.

This argument is not a semantic device to confuse the real purpose of the Model and it has been accepted as the truth.

It has been important to keep this distinction clear from the outset not only to help gain political acceptance for the capitalistic point of view of the Model, but, as well, to minimize resistance to a joint venture between Mexicans and investors from the United States.

As the political inquiry clearly showed, when the Model is discussed as the beginning of a program of rural development in Mexico, the recommendation is immediately and urgently made that Mexican money be used exclusively, if possible, and in the majority, at least.

But the Model is not conceived as the start of a Mexican program. It may be that. Historically, however, the Model was envisioned as establishing a new institutional form by means of which large amounts of private investment capital could be stimulated to flow into the agricultural sectors of all countries. And, it was stated, if large amounts of capital are going to be so used, much of it would

have to come from the United States. Long before the prototype became the basis for a study in Mexico, the financial position was stated this way: *

"Any probe of the economics of the nations needing the most money reveals three additional facts:

(a) There is not enough private capital to affect agriculture significantly.

(b) Those who control what private capital there is generally are not interested in agriculture, even though they may have been or are landowners. In their eyes the risk is too high, politics too central, and the return too low in comparison, for example, to money put into real estate speculation or into the operation of protected industries.

(c) The private sector of most of these countries, where there is one, is traditionally not philosophically motivated to help the myriad of poor small farmers in a direct, partially altruistic way. So, with private capital required and little internally available, the resort must be to foreign capital and the management which comes along--and much more of both than is now being supplied.

"What all of this really means is that large amounts of private money from the United States must lead the way. It is only in the United States that private capital, skilled management, dedicated foreign policy, and personal conscience combine in the proper mixture and in sufficiently large quantity to give hope to the hungry world--and to ourselves. It would be comfortable if foreign aid via the government had done or could do the job. It has helped, but it cannot be the prime mover. It would be nice if more free enterprisers from Western Europe and from Japan or other centers of private wealth, advanced education, and technical know-how would carry a large share of the burden. But there is no evidence that they will take the initiative or share the risk attendant on the pioneering role."

As this position has been made clear to government officials and politicians and influential members of the Mexican private sector, it has helped win sympathy for the proposed joint venture structure of the Model. Too, as understanding has been won as to the worldwide implications of the Model, it has become progressively easier to keep the Model in neutral political territory

* IBID. Simon Williams, Private Investment in World Agriculture.

and out of the debate over agrarianism versus agrarian reform which is peculiar to the Mexican political ambiance.

5. To further strengthen acceptance of the joint venture nature of the Model proposed, the design clearly depicts a policy of transferring ownership from the original investors to the farmers in a reasonable length of time. As well, the mechanism for making this transfer, utilizing laws created in Mexico to protect against exploitation of the public interest by any private investor of whatever national origin, is spelled out (see Chapter 3, Part IV, to follow, for details). In discussing the Model among leaders of both political and official institutions, this aspect of the proposed corporation has been enthusiastically noted and without question will make it easier to gain the ultimate approval and overt support being sought.

Nothing more of much use can be said at this time relevant to this query: Is the Model politically acceptable? Formalizing acceptance is bound to be a subtle and complex procedure. However, nothing has come up to make it appear impossible to accomplish; indeed, all of the avenues appear wide open to work closely and in harmony with the Mexican Government and with the people and institutions of the nation.

Chapter 3 - Part III

IS THE MODEL ACCEPTABLE TO THE FARMERS?

The Model will depend upon the voluntary cooperation of farmers who willingly enter into credit-management-marketing contracts with the corporation. These contracts will be for one crop year at a time. Continuity of the relationship between farmers and the Model will depend upon free choice to remain in the system.

Selling the Model to the farmers will proceed in these stages, namely:

1. During 1967, 1968, and 1969, as a part of the feasibility study, test plantings of corn have been made throughout the valley site. These efforts in reality constituted a first critical step in selling the farmers. The results, elsewhere shown in this report (see Chapter 4, under the financial projections of the Corn Grain Division of the Model) have persuaded the farmers to the integrity, competence and personal attractiveness of people they will associate with the Model, introduced as a formal entity. In other words, those who will do the selling of the Model are already warmly welcomed in the community and have already planted the seeds of acceptance.

At the time this feasibility report is being written, the farmers do not know anything about the Model. What they have been told and have accepted is this: the mixed team of Mexicans and North Americans working in the valley represent people outside who are interested in the possibility of bringing more credit, technical assistance and new, improved marketing arrangements to the people. First, however, it has been necessary to prove that yields of corn could be greatly increased at reasonable cost; that the

farmers could and would follow the new practice under supervision; and, that the farmers from the different communities could work in harmony with outsiders who would be equally interested in everybody in the valley.

It has been deemed unwise to start discussions of something as complex and long range as the Model, before it existed. Rather, it was felt best to talk about things that were happening, things the farmer could see in action, even though a part of the action was tied to a future, somewhat vague possibility. There has been nothing vague about the test plantings and something very concrete about yields from 2 to more than 6 times greater than had ever been seen before.

2. During the first operating year of the Model, before construction of the dairy and swine facilities is started, the primary emphasis of the incentives to be offered is intended to be on increased net income from corn farming and minimum risk to the cooperating farmer. Specifically, these incentives will be stated as follows:

As regards income--

a. In the very first year of his cooperation, net income to the farmer from corn will increase from a current average of about \$70 per hectare to roughly \$160. For the majority of farmers, this increase will be closer to fivefold.

b. If, in the first year, a farmer places all his land under contract and he controls a typical parcel of 8 hectares, his net income from corn farming alone will rise to roughly \$1,280, in contrast to an average annual income from all sources of about \$385. This still leaves open the opportunity to double crop. The reason for this gain is better land use.

The Model system uses all the land the farmer has, for corn, every year. Currently, half his land lies idle 8 months each year, "resting". The practice, which covers a two year cycle, is this: when half the land is in corn, the other half is resting. After corn, the farmer waits until the following winter and then plants the legume, chick-pea. Chick-pea is followed immediately by corn (or sometimes sorghum, in this valley). Thus, in a given year, a farmer with 8 hectares gets one crop of corn from 4 and one crop of chick-pea from a different 4.

Some change may be noted in the valley. In 1968, approximately 15% to 20% of the corn fields were immediately followed by chick pea (double cropping) and, in 1969, these farmers will put the same land back into corn. It is these advanced men whose incomes are rising above the average but even they will benefit materially from higher yield and other cash benefits which accrue under the Model system.

c. In the first year, each cooperating farmer will save about \$132 per year, on the average, as a result of lower interest charges on loans. This, of course, will be highly variable, but the calculation may be made based on the following data. The average rate of interest paid in the valley to money lenders is 3.5% to 4.5% per month (use 4%). The average new borrowing each year for farming and personal needs is \$240. The average long term debt to moneylenders on which interest continues to be charged is about \$360. The Model will advance credit at 1% per month (use 12% year in a calculation) to a total of \$344 (see Chapter 3, Part VII).

Thus:

i.	farmer normally pays 48% on \$240	=	\$115.20
ii.	farmer normally pays 48% on \$360	=	<u>172.80</u>
iii.	farmer normally pays annual interest	=	288.00
iv.	with Model, farmer pays 12% on \$344	=	41.28
v.	reduces long term debt by \$120 and pays 48% on \$240	=	<u>115.20</u>
vi.	farmer pays interest first year in Model	=	\$156.48

Each year for three years, as long term debt is reduced to zero, interest savings go up and net return to the farmer increases very significantly. What farmers owe to the moneylenders varies from year to year and so does the interest, depending upon where the money comes from and any such calculation as shown above is inevitably crude. Nonetheless, these figures represent the picture as the farmers painted it to interviewers seeking a description of the economic status of the farmers in the four communities potentially involved in the Model scheme.

d. In the first year, each cooperating farmer will save \$54, on the average, as a result of the Model providing free storage for the amount of corn normally bought at retail in the months after the harvest, for family consumption. At harvest time, the farmers are usually so desperate for cash that they hold back only about 40% of family needs for the following year. When this is eaten, the farmer starts to buy in the local stores, usually on credit, but at a price which rises to 50% to 100% higher than the value of the grain at harvest time. The average consumption of corn per family in the valley is five pounds a day or 1,825 pounds per year. If he buys 60% of this at 4 cents per pound, his cash bill would be \$43.80. Since this is generally bought on credit, and, to be charitable with reference to the storekeepers, let us say the farmer pays interest equivalent to 4% month, the loan to be repaid at harvest, by carrying the debt for six months, the farmer adds an interest burden of \$10.51, bringing his bill to \$54.31.

ADDED TOGETHER, THE FARMER WHO PLACES 8 HECTARES UNDER MODEL MANAGEMENT INCREASED HIS NET INCOME THE FIRST YEAR TO ABOUT \$1,466 FROM CORN FARMING ALONE, IN CONTRAST TO CURRENT NET INCOME (BEFORE PAYING ANYTHING ON THE PRINCIPAL OF LONG TERM LOANS) FROM ALL SOURCES OF \$385, ON THE AVERAGE. FURTHER, HE IS STARTED ON THE ROAD OUT OF DEBT AND TOWARD REAL SAVINGS.

As regards risk--

In Chapter 3, Part VII, it is noted in describing the short term (crop season) credit system of the Model that it is anticipated the Government will provide guarantees to private banks which make the necessary loans to the corporation. This eliminates the risk for the investors. It is also necessary, in persuading the farmers to change their traditional ways, to take the risk of change out of his decision. In an important way, the farmer sees his decision in much more fundamental terms than does the investor. The farmer measures risk in terms of survival. The investor may envision a financial loss but surely no investor in the Model will be threatened by disaster by the loss of his risk capital. For this reason, particularly during the first several years of operation, the incentives described below must be offered. In time, with success, the guarantees needed by both the pioneering farmer and pioneering investor will become less and less significant to the on-going venture. Thus, the first year, risk coverage will be defined for the farmers as follows:

a. As part of the credit he gets, each farmer will take out crop insurance of \$100 per hectare (the maximum available) at a premium cost of \$5, with the National Crop and Livestock Insurance Corporation. The Model will be the beneficiary of payments made for losses from natural and uncontrollable disasters, such as drought, excessive rain, flooding, hail, fire, unusual plagues, among others.

b. If yields on contracted land are less than 1 ton per hectare, no loan repayments on practice credit will be due; this loan will be cancelled. Loans made for personal credit will be carried into the next year at no penalty interest charge.

c. If yields are between 1 and 2 tons per hectare, which is the current average, the farmer must pay back only 1/3 of the practice credit and can defer personal loan repayments until the following year, to any amount of what is due which he chooses, without penalty. This procedure essentially guarantees to the farmer a net return equal to his traditional income from corn. Indeed, due to lower interest rates, the risk of the farmer is not just zero; he makes a net gain.

d. If yields are between 2 and 3 tons per hectare, the farmers must pay back 2/3 of all credit extended, including 100% of the practice credit; the balance on personal credit may be deferred with penalty but is not cancelled.

e. If yields exceed three tons to at least 3.5 per hectare, the farmer must pay back all credit loans received, at harvest time.

It is assumed that the Government will guarantee the short term credit loans on the basis of the foregoing schedule of risk incentives to be offered to the farmers.

Beyond the argument to be used with the Government which relates to the role of public guarantees in attracting private capital into rural development (see Part VII of this chapter for details), there are two further points to be made:

One, at the site of the Model, there has been no recorded crop failure and, in the memory of the people, no severe drought and no severe enough excess rainfall to reduce yields excessively. From what is known about the hazards to be faced, e.g. late start to the rainy season, heavy rains after planting, insect infestations, among others, it is safe to predict that careful and thorough land and crop management can keep them all under reasonable control.

Two, there comes a time in every research program which was defensible in the first place, when risk must be taken on exciting, reproducible results. if they are ever to be applied on a commercial scale. The practice being applied at the Model site is based on years of research by the Mexican National Agricultural Research Institute and the Rockefeller Foundation. In addition in 1967 and 1968, on roughly 12 and 50 acres respectively, the procedures dictated by the research were applied and adapted on site, with results that exceeded predictions. In 1969, on 120 acres, further substantiation of yields is being sought.

It is of critical importance the world over that more risk be taken by investors, public and private, in applying the results of sound agricultural research. The tendency is to delay, to demand endless experiments, to debate without surcease what is predictable and what is not in biological situations. It is fundamental among the principles governing the design of the Model as a prototype that uncertainty can be assessed in analyzing the state of the art in agricultural research; that risk can be gauged; that decisions to go from laboratory to production can be made with comparable certainty to those made in industry in dealing with product and process technology.

3. After the first year, income incentives will be defined in terms of the specific real increases which will accrue as the result of interest savings, dividend payments and, as credit societies are formed, earnings on investment in these societies. Emphasis on risk guarantees will decline until, when all are free of long term debt to the moneylenders and the first dividends from the Model are paid in cash, no further risk guarantees other than crop insurance will be held out.

4. During the first year, even while farming contracts are being entered into, the Model will begin negotiations with the communities (ejidos), with the State League of Agricultural Communities and with the National Department of Agrarian Affairs, to obtain an allocation of land on which to build the dairy and swine facilities. This land can not be bought. It is at this time that the full scope of the Model will be revealed for the first time to the farmers and explanations of the benefits made. Again, emphasis will be placed at first on income; only as it takes place naturally will the more subtle benefits be introduced, e.g. long range savings in the form of fixed assets; fixed assets as a key to creditability; diversification of income risk; taking value added on raw materials, among others.

Will the farmers accept the plan? Will they try it the first year and stay?

No method exists which can precisely forecast the behavior of people in a voluntary situation such as will be faced by the Model. The questions asked above simply can not be answered unequivocally. Those who have worked on this feasibility study and who have had an intimate and on-going involvement with the people in the valley site, are completely convinced that the farmers will cooperate, initially and long term. It must be stated, however, that the evidence is qualitative and is based upon three different though related sets of observations: one relating to criteria used in site selection; a second relating to the experience of working with the farmers on experimental corn production tests; and, the third

relating to the results of a study of the attitudes, motivations, lives and cultural mores of the farmers, their families and their communities.

1. Criteria Used in Site Selection - In circumscribing the concept of the Model, one of the limits was defined this way: private investors should not be primary agents of change and should avoid primitive situations. To facilitate entry into a rural society, capitalism should, instead, be focussed on communities where social and political organization evidences at least the beginning of progress toward more sophisticated form; where prior public investment in infrastructure has clearly laid the groundwork for expanded economic activity, that is, where schools, security, roads, water resources and sources of energy such as electricity, among other physical structures have been started; and, where some integration into the total economy has been achieved, in the form of marketing arrangements, the use of money and the introduction of some modern technology. Find sites that meet these criteria and, it is argued, people will be found who are ready for further change. They will have had contacts with outsiders and at least in some cases the experience will have been benign; rarely will the next outsider to arrive on the scene be rejected out of hand.

When the site for the Model was finally picked out of literally dozens of alternatives within a radius of 150 miles of Guadalajara, it was in no small way because it met all the criteria defined above. The assumption was made that given this kind of a rural society, the chances

that the farmers would be interested in an economic development scheme would be high and the odds that they would have the competence to participate in a technical and in an ethical way would also be favorable.

2. Working Experience With the Farmers - As already noted, during the crop seasons of 1967 and 1968, test plantings were made. From the outset, this engendered no problems; quite to the contrary. Land was freely offered, as was labor. Farmers took directions readily. In 1969, as this report is being written, a more comprehensive test of cooperation is under way. Twelve farmers have already agreed to form the first Solidarity Group (see Chapter 3, Part VII) ever in the valley, with joint responsibility for each other's debts. Each member has placed 4 hectares under management. The farmers have agreed to accept a price for their grain equal to 100 pesos less than the sale price in Guadalajara. They have agreed to the conditions of repayment based on yield, as outlined above. Indeed, they have agreed to every working principle on which the grain operation of the Model is predicated and, in effect, are permitting the Model to be pretested in miniature form.

Also during these years, the study team was continuously at work in the four communities involved, gathering data on all aspects of the lives of the people who would be a part of the scheme (see section 3, below). The reception given the interviewers was always friendly; information, withal not always accurate or even wholly honest (on the question of yields and income and debt there were always matters of pride involved, as well as uncertainty as to whether or not the Government was in some secret way developing a punitive program) was supplied without apparent

reluctance. There never was any concern to make a connection, beyond the casual one made by the interviewers, between the corn production trials and gathering social, political and cultural data. All in all, the feeling has been inescapable that the people in the valley represent a fine human resource; that they can be brought into the Model scheme if patience, honesty and sensitivity characterize the bond between farmer and corporation; and, that they will comprehend, value and remain loyal to the program.

3. Anthropological Evidence - After choosing the site on the basis of empirical data, it was felt important to check more scientifically into the nature of the people at the site, so to refine a judgment that the Model would be acceptable and could be expected to succeed. *

Using the productivity tests as an excuse for further "talk", a basic interviewing program was developed under the direction of an anthropologist from the United States, then resident in Mexico and with over fifteen years of experience in the country, who, in turn, worked with

* Actually, at the time of planting in 1967, three alternative sites were selected for production trials and for anthropological analysis. One of these locations was abandoned very early as it was learned that violent political activity characterized the largest communities in the area and that this feature of the society was likely to be dominant for some time to come. Cropping and interviewing proceeded at the other two sites and both proved acceptable from the standpoint of yield and the quality of the people and their organization. The site finally chosen was picked because of the layout of the land. In this case, the distribution and location of the farming areas lent themselves better to tight administration, an important goal of the Model as a pioneering venture.

a group of Mexican assistants. During the early weeks of planning this inquiry, all the field workers spent days and nights in the valley, merely becoming acquainted and gaining social acceptance.

While this informal relationship was being established, a series of detailed questionnaires were drawn up covering every aspect of the lives of the people which might bear on a sensitive appreciation of how they might react to the Model and how this reaction could be said to encourage or discourage the idea that full and wholehearted cooperation was obtainable. The key subject areas explored over a period of almost eight months were:

- demographic data, including educational and financial status and mobility
- family organization, including kinship structure, distribution of labor and role dynamics
- community organization, with particular emphasis on leadership identification, general attitudes towards change and the nature of governmental, educational, health and other institutions
- social psychology, including a measure of community pride, reaction to group activity, as well as competitive feelings within and between communities
- land tenure and the background of current land use patterns

- history of each community, as a qualitative measure of the origin of practices and attitudes

- anecdotal reflections on traditional rivalries, administrative malpractices and indications of violence and criminality.

The sample at the Model site covered 67 ejidal families, in depth, selected at random from the four communities but in proportion to the size of the village. This proved to be an 11% sample of the total number of farmers in the valley. In addition, many informal interviews were recorded among merchants, laborers, share croppers and the few small private land owners with parcels in the valley. Special attention during this period of unstructured discussion was given to the attitudes and opinions of the formal and informal leaders in each village.

As expected, a vast amount of information of varying quality was obtained and a detailed description of these results will be included in Part II of the final report to AID which will go more deeply than does this feasibility analysis into the general methodology of inquiry developed in the course of the work. Isolating what seems to be most significant to potential investors in the Model, the following highlights may be noted:

1. The people in the valley:

- a. are highly aware of change possibilities and eager to make changes;

b. are keenly aware that they are financially and technically inadequate;

c. recognize their need for credit and technical assistance from some outside agency;

d. are focussed and articulate relative to the same three incentives the Model intends to use as the primary appeal for cooperation, namely -

i. net financial return above their debt and getting out of debt;

ii. community development as an outlet for their pride; and,

iii. greater opportunity for their children.

2. The political climate in each of the four communities currently and for the foreseeable future is favorable to the establishment of the Model. Good working relationships exist between the ejidatarios and local officials and a sense of trust and understand has begun to develop. This is important. Local officials wield a great deal of influence and can, on their own, decide what works shall be undertaken or ignored and what response there will be to external initiatives. Although they some-

times act (or do not act) in their own narrow self-interest and without consulting the community, each of the local officials (Ejido Presidents) has evinced sincere interest in progress and change. All have been most helpful to the people working on the Model; two of the four have been involved in the test plantings of corn and all four facilitated the anthropological study by arranging contacts, giving the study their official sanction and by agreeing to be interviewed themselves.

3. At the intercommunity level, no significant difficulty is evident. In pre-revolutionary days, serious and violent disputes flared between the local haciendas and the surrounding villages which carried over into the communities formed after 1910. Even after the revolution, members of one community would not venture unarmed into another. These old disputes have largely been forgotten. The soccer teams of each village play round robins. The last major boundary dispute was settled peacefully when one community requested the State Agriculture Department to define its limits; this village accepted the decision even though it was contrary to their interests. Two other communities settled a longstanding difficulty stemming from the fact that each had one tract of land at the ends of the valley furthest from the people. Leaders met and agreed to swap tracts. All of this is an encouraging indication of growing political maturity and stability.

4. The influence of the church in secular affairs virtually disappeared with the revolution of 1910. The activities of the village priests are quite narrowly circumscribed. However, it is well to keep in

mind at all times that while the men in the valley are not regular church goers, they are strongly Catholic and tend to be suspicious of propagandizing efforts by other faiths . . . or what can be made out to be such efforts. Care has been exercised to keep the local priests informed and friendly and to be sure that the project is identified in purely economic terms. As well, the Model in its entirety has been presented to the Archbishop of Guadalajara and his support solicited should any resistance ever emerge on the part of the local priests. In point of fact, there is little such opposition in evidence or to be expected.

5. The ejidos are peaceful places. Criminal activities are minimum, as one might expect among people living so close together and being so interdependent. While the extended family unit tends to dominate interpersonal relations, there is a great deal of reliance on neighbors in the course of life and each village is characterized by public works, e.g. churches, schools, improved streets, which have been built by voluntary labor and with voluntary financial contributions. A real basis exists for the type of cooperation called for by the Model program.

6. There is stability in the group of farmers the Model will relate to over the twenty years of investor participation. The majority are the original ejidatarios in the valley, having received their lands in 1925 or 1933, when all the land was distributed. Typical age is 50

to 55 years and the Model can safely assume that it will be working with the same farmers for some years to come. Moreover, most of the farmers have children 15 years or older living at home and helping to work the land. When these children inherit the rights to the land, of a consequence, they will have had years of experience with the Model, providing the best kind of transition from generation to generation.

7. There are, of course, problems to be worked through. One important problem relates to the fact that roughly 25% of the farmland is thought to be rented. This practice is illegal but it is real and rented land must be brought back operationally into the hands of the ejidatarios or their families. The fact that this problem can be attacked is revealed by the following chart:

REASONS FOR RENTING LAND - 4 COMMUNITIES COMBINED

	<u>Actual Incidence *</u>	<u>Historical Incidence</u>
<u>ILLNESS</u> - which temporarily or permanently incapacitated	40%	46%
<u>ECONOMIC NECESSITY</u> - had to rent land to get money and lacked access to credit	31%	48%
<u>OLD AGE</u>	23%	3%
<u>WIDOWS</u> - no able-bodied men in the family	6%	3%

* in sample

By supplying credit; by encouraging the formation of credit societies; by pushing for improved health facilities and by bringing about the wealth required to pay for health services; by training and orientation of youth

and by the current pool of day laborers to help organize services to the aged and to widows the Model can attack the root causes of renting land.

8. Another problem lies in the resistance of the moneylenders to being replaced. Many of the relationships involved are of long standing. Fortunately, this problem also lends itself to a solution. The majority of the moneylenders servicing the valley live outside and the business they do in the valley is but a fraction of their total lending operations. As nearly as can be found out, none of the moneylenders has a strong political base and it is estimated that none would attempt a serious fight with the Model in the face of the strong thrust of both Federal and State governments to bring more credit from private sources at lower rates of interest to the small scale farmers of Mexico. Further, as has already been observed, perhaps the most powerful urge these farmers have is to get out of debt to the moneylenders and though relationships between lender and borrower may have a long history, one can detect little loyalty on the part of the farmers that would turn them away from the Model.

The other moneylenders are residents of the valley and are generally merchants, although a few are farmers that in one way or another have managed to parlay their capital into substantial savings. It would be difficult to imagine these few people making a public fight against a plan which would so vitally affect every farmer in their own communities.

From the attitudes which exist, it is more predictable that the merchants will see the benefits to their sales of increased local income and instead of fighting will try to expand services.

In facing the prospect of opposition from the entrenched moneylenders who make a very good thing out of the heavy debt burden of the farmers, it is easy, perhaps too easy, to sound like Pollyanna and gush with optimism. In truth, however, the fight does not seem to loom large or in any way terrifying. The moneylenders have been run out of many communities throughout Mexico in recent years, as credit societies and other forms of cooperatives have grown in number, as the public and private banks have improved upon the total system of rural credit, and, as various private agribusinesses have developed their own credit-contract farming operations as the means of ensuring supplies of raw materials. The trend of the times is against the rural moneylender, at least in terms of arming him with political power, locally, statewide or nationally.

Chapter 3 - Part IV

IS THERE A SOUND PROCEDURE FOR THE TRANSFER
OF OWNERSHIP TO THE FARMERS?

WILL THE FARMERS BE COMPETENT TO TAKE OVER?

CAN CONTINUITY OF CORPORATE POLICY BE ENSURED?

TRANSFER OF OWNERSHIP

The transfer of ownership from the original investors to the farmer participants is considered to be fundamental and irrevocable policy affecting the design of the Model. There are two reasons for this:

1. as noted in Part II of this Chapter, it is believed that a commitment to transfer ownership of the fruits of capitalistic enterprise to local people is prerequisite to gaining political acceptance for a claim that capitalists can and will devote any of their resources to benefit the poor and powerless residents of the rural areas of backward countries; and,

2. it is felt that the goals of the Model, namely, dynamic economic growth in selected agricultural areas, simply cannot be achieved in any other way. As modern farming practice accelerates the trend toward mechanization, the farmers themselves must come to own the instruments of capital which replace their labor. Otherwise, social disorder and economic misery will be exaggerated rather than relieved. Further, as small farms reach maximum productivity and yield maximum income from

the land (for their size), farmers must come to own those additional instruments of capital which permit upgrading of raw materials, if their economic level is to rise in a dynamic fashion. Capitalism must, in other words, catalyze the formation of a broad base of ownership of self-sustaining, diversified, expanding, wealth-producing enterprise among rural peoples, in order to contribute in a meaningful way to relieving the twin pressures of hunger and poverty.

In seeking the means to effect the orderly transfer of ownership, three specifications were defined:

- first, from the day the Model is incorporated and comes into public view, the intent to transfer ownership should be formal, legally binding and highly visible, even though no money or stock assignment may shift for some time to come;

- second, the mechanism should satisfy political demand that the interests of the campesino are fully protected against exploitation; and,

- third, the responsibility for managing the accumulated assets of the farmers during the years it will take to complete the transfer of ownership should be in the hands of an impeccable third party whose competence is unquestioned.

The Trust Laws of Mexico provide an elegant solution to the problem of meeting these specifications and accomplishing the task of transfer. A Trust, widely recognized and accepted in Mexico, may be set up within a nationally chartered private bank, with its beneficiaries and purposes defined, even while preparations to fund the Trust are in progress. The Trustees, in the case of the Model, can be distinguished Mexicans from the public and private sectors who have absolutely no financial connection with the corporation. The Trust may be so constituted that the Trustees, who would have no management control over the day-to-day operations of the Model, could challenge these operations in the courts if they felt the public interest to be violated. And, in the classical manner, the Trustees may be empowered to manage the funds in the Trust for appreciation purposes.

In use, the Trust mechanism will follow this procedure:

1. At the time the corporation is legally constituted, a Trust is to be established in a national bank. Two blocks of stock are to be issued. One block carries the control and is held by the investors. The second block, designated to be of equal value to the first, is placed with the Trustees, earmarked for eventual ownership by the farmers but with no specific assignment noted.

2. When profitable operations begin, a percentage of after-tax profit will be paid into the Trust and will continue to be paid in each year thereafter until the transfer of ownership is made. The Trustees

will invest this money and such interest as it will earn, in other sectors of the economy but always in institutions regulated by the National Banking Commission. All deposits in such institutions are guaranteed by the Federal Government, in amounts without limit.

The amount paid into the Trust is to be sufficient so that at the time both ownership and control passes to the farmers, the original stockholders will have been paid back the total value of their original equity plus an amount which reflects the increased value of the assets owned by the Model (as an approximation of this increase, the financial projections of the Model equate it to the amount of long term debt paid off at the time the farmers take possession).

3. As money is paid to the Trust, the stock held by the Trustees begins to be identified with specific farmers. No such assignment will take place before the fourth year operation, as presently conceived. By that time, two facts will have emerged to guide stock allocation. One, the farmers who are going to participate in a stable manner will be known. Two, the amount of corn grain each participant can and does sell to the Model will have been quantified, in an absolute sense and in relation one to the other. In other words, the amount that each farmer contributes to the profit of the Model can then be calculated and his base of ownership will be in proportion to this ability. Since corn growing is the common denominator of the economic activity of all farmers, basing shareholding this way is both equitable and understandable.

4. Stock held in the Trust carries no vote and management control remains with the original investors until the transfer of ownership is completed. Farmers may not sell their shares or use them as collateral while they remain under Trust administration. If a farmer opts out of the scheme, he sells his shares to the Model at current value and these shares are redistributed among the remaining farmers. If a farmer dies, his estate may remain in the system if the farm continues to be operated within the family; otherwise the estate may sell the shares to the corporation which again places such shares in the pool to be owned by those remaining.

The stock held by the original investors may be sold to other "outsiders". This option is necessary to make the investment attractive. No attempt is made in this feasibility study to define how such sales will be accomplished or what limitations may be imposed by the Board of Directors of the Model on the qualifications of new stockholders. It is presumed that such stock sales will tend to increase the participation of Mexican private interests.

WILL THE FARMERS BE COMPETENT TO TAKE OVER?

In the financial projections of the Model, it will be noted that transfer is completed twenty years from the start up date of the corporation. At this time, ownership and management pass into the hands of the farmers. The original investors withdraw totally. The Trust is terminated.

There is no indisputable basis for selecting a twenty year period other than an estimate, made out of experience of development projects throughout the world, that it could take this time to train enough local people to manage the enterprise when the outside investors withdraw. Twenty years represents one generation of children and it would seem reasonable to assume that it is from the children of today that the first local managers, technicians and skilled laborers will be drawn. With this educational point-of-view in mind, the twenty year build-up of the Trust is presented to illustrate what can be accomplished in this time, not necessarily to define the limits of what management must do. Conditions may vary from the financial forecast. Management may elect to change the rate of pay-in to the Trust as the result of a better alternative being thought of to achieve the same ends. Training may proceed more rapidly and effectively than anticipated and a speed-up in transfer may seem appropriate.

No costs are included in the Model budget which are directly related to the critically important task of training over the twenty years of outside management. Yet there can be no doubt that these costs will be considerable and if they must come out of profit, the entire investment picture shown would have to be drastically changed.

The assumption has been made that training can be directed and financed in the following distinct but interrelated ways:

1. In the operation of the corn grain division of the Model, it will be noticed that a technical staff of university trained agronomists and carefully selected technical assistants with a long history of practical farming experience, is on the corporate payroll, full-time. In point of fact, this staff will not be engaged in the field work throughout the year or even full-time during the corn season. It is intended, therefore, that this staff will be organized to provide special training programs covering such skills as the management of new cropping systems, marketing, the organization of credit societies, and other types of community-wide cooperatives, e.g. purchasing.

2. During the years of its operation under the management of outsiders, members of the farm communities will be drawn at every opportunity into technical and managerial roles and trained on the job. This kind of participation will range from the simplest tasks of machine maintenance to representation on the Board of Directors.

3. Mexico, as is generally true throughout the developing countries of the world, supports a wide variety of public institutions concerned to introduce and upgrade rural education for children and adults. In addition, a myriad of private institutions, national and international in character, exist in the countryside, trying in a multitude of ways to locate themselves in an environment where they can accomplish something constructive and enduring.

A preliminary study was made to provide a basis of estimation as to how many institutions were at work in rural Mexico or had programs which could involve rural Mexicans, which conceivably could be turned to by the Model. Between the Federal and State Governments, church organizations of all denominations and both national and international private secular groups, over 25 were identified for future contact. The combined resources of these institutions clearly run into many millions of dollars. Their combined experience is valuable beyond quantification. Their urge to help achieve ends identical with those of the Model adds up to a powerful educational force if even a fraction of it could be integrated and focussed on the valley site of the Model.

Among its many pioneering purposes, the Model is intended to demonstrate that the diffuse efforts on the part of many organizations to stimulate agricultural development and improve rural life, can be brought into focus on a commonly shared project. Indeed, the management of the Model and any others who can do to, as well, must make this demonstration if private enterprise is to flourish as the Model hopes to flourish. The cost of all aspects of general education and skill training among even small numbers of rural people is just too high to be absorbed by the profit structure of any project which intends to increase farmer income sharply and dramatically and still attract risk capital.

It is expected that the successful entry of the Model into the site will create precisely the environment for action being sought by these assistance agencies. As income rises, a driving motivation of parents, which is overwhelmingly evident in the valley, to better educate their children, is going to manifest itself strongly. Better local schools will result. More follow-up into secondary education and

beyond will occur. With success, the paternalistic character of the Model is inevitably going to generate an influence over educational trends and it is intended to use this influence to encourage the educational system to turn out skills critical to the operation of the Model . . . and, as this guidance is shaped, it is intended to draw in every outside agency possible, bring people, materials, scholarships, program ideas and other precious resources to bear. *

It should further be observed that the corporation will not be starting from scratch. The people in the valley are not in a primitive state. Literacy is general. There are schools covering the first

* There are two aspects of what is being discussed that are not directly relevant to the issues of training and project feasibility covered in Chapter 3, Part IV but which are worthy of note. They cast insights into the complexity of the analysis upon which the Model is based and indicate how far and wide-ranging this feasibility report might well be if space and time were limitless: one relates to paternalism; the other relates to birth control.

Re paternalism - In the article previously referred to (Private Investment in World Agriculture), Williams sums up the thinking of this subject which is carried into the concept of the Model, this way:

"Management must be deliberately paternal with the farmers at the outset. It must take into account their ignorance, fear, and total lack of resources other than a little land and a little labor. The technical staff must substitute for ignorance. Action must come before understanding if speedy conversion to new procedures is to take place. Fear of change must be overcome by a direct appeal to the pocketbook. Initial participation by farmers must be guaranteed free of risk, which means that the U. S. investors must take all the risk until the new practice is launched and proven. Lack of resources must be overcome by extending the full range of credit required.

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six years of education in two of the three villages which are physically in the valley. A number of tractors and a variety of other mechanical equipment, including cars and trucks, has been purchased and is maintained. Each ejido operates through an elected government wholly concerned with ejidal affairs; and each village is a part of a larger political unit, the "municipality", which integrates the people into the state and national body politic. The local society has a structural hierarchy of formal and informal leadership. Many of the men in the valley have had jobs outside which demand a range of technical skills.

"For many ardent free enterprisers, this demand for patient paternalism may seem a contradiction. But the facts dispel appearances. The poor and hungry rural families of this world are intent on survival. Change in practice has been eliminated from their cultural style because in time they have learned that what they do and the crops they grow come closer to guaranteeing life than anything else in their ken. They are in bondage to subsistence. And until the bonds are broken, there can be no freedom of choice conceivable, no entrepreneurship demonstrated, no idea of risk entertained, no time or motive to learn. Anyone who has observed the small farmers on all continents knows they are intelligent, thrifty, independent, and basically free enterprise oriented. They just need a moment in time free of sickness and uncertainty. Giving them this is another part of the revolutionary use of U. S. capital."

Re birth control - The growth of population in the valley is such that in the future, population pressure on the land and on income could wipe out the gains achieved for the people by the creation of the Model. Yet, it is admitted that in assessing feasibility and in programming training, no deliberate, overt attention is given to family planning. Why?

It can not be denied that the strategies of gaining political acceptance and farmer cooperation affected the choice. Mexico is a predominantly Catholic nation. Despite the separation of Church and State which has marked the nation since revolutionary days, the Government has moved very slowly and conservatively in encouraging family planning. The matter is sensitive and covert. Surely, for the Model to take a dogmatic position, to insist that the effort is not worthwhile unless birth control be freely attempted as a part of the scheme, would be something less than wise.

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Thus, in answer to the query: will the farmers be competent to take over, what can be said is this, only: a) they certainly have the intelligence to be trained; b) from what they and their children now do there is every evidence of their ability to learn complex technical and managerial skills; c) if the Model successfully enters the valley there will be increased incentive for at least some of those trained to stay in the valley; d) the Model will rely primarily on other resources than it commands within its own organization to bring about the training required; e) as skills emerge, they will be increasingly utilized in the

The matter is made more difficult to handle boldly by the fact that the Model is a rural enterprise. In urban Mexico, birth control devices are widely used and birth control counsel is openly offered. In rural Mexico, such is not the case. It is in rural Mexico that devotion to church teachings is strongest . . . and rural women must be numbered among the truly devout in Mexico. Moreover, the rural priest may be a man of great influence in the community and an outside agent of change does well to take this into account.

It is hoped, of course, that in a quiet way, the success of the Model, as it stimulates economic improvement and the urge for better understanding of all in life that bears on economic, political and philosophical freedom, will be a factor encouraging family planning. It is hoped, as well, that national family planning programs will develop over the years ahead and that the Government, rather than the Model will generate local initiative. It is assumed that the management of the Model will never lose sight of the importance of limiting population growth and that it will take advantage of every opportunity to play a part.

But what must be remembered by those who read this report is that in attempting to create the Model, the emphasis is on demonstrating a method whereby private capital can be made to flow in greater quantity than heretofore, into the agricultural sectors of developing economies. No presumption is made that the approach used will answer every question bearing on the rural problems of the world. More than birth control is set aside. Nutrition is not dealt with directly; even the milk and meat divisions of the Model are more concerned with diversification of production to maximize income and reduce risk than with better nutrition. National marketing questions are avoided. No responsibility is taken to solve in advance this pertinent query: if the Model were multiplied a hundred fold, as it could be in selected corn producing areas of Mexico, how would this surplus affect national agricultural strategy?

(continued)

day-to-day operations of the Model as one means of making the transfer of management orderly and as rapid as proof of competence is found; and, f) at best, one can only "feel sure" that competence can be developed and applied. There is no way of knowing for sure until the try is made.

CAN CONTINUITY OF CORPORATE POLICY BE ENSURED?

This question refers to two distinct phases in the history of the Model, namely: first, the period during which the original investors control; and, second, thereafter, when the farmers take over. In either case there is no final answer. Still, the concern inherent in the query, which has been raised over and over again both in Mexico and the United States, is critical and demands some response.

During the first phase, the existence of the Trust provides some assurance that policies judged to be in the public interest will persist.

In the final analysis, however, it is impossible to regulate integrity.

It is awkward that at so many points in discussing the basic issues affecting the success of the Model, it is necessary to turn to faith rather than fact. Yet, at times there is no other way to respond.

The evidence is so essentially qualitative. Interpretation is from

In truth, the Model represents a technique. If the technique works, its implications can then be analyzed within a broader frame of reference and over a longer period of time than has been the case in thinking through the design and operation of the Model itself.

(end)

first to last, an extrapolation of experience rather than a calculation from hard data. One comes to believe, to have a "gut feeling" that some things can be accomplished and others cannot.

It is believed, for example, that among farmers there is ability enough to one day manage and operate the Model and that there is honesty enough to permit the extension of supervised credit without need for matching collateral. It is believed that among politicians one can find leadership more concerned with real progress than with dogma. And, it is believed that among capitalists there are those who would insist on pursuing the goals of the Model without let up. Indeed, it is believed that those who will be attracted to this pioneering venture in the first place will be selected from that sector of business which can be depended upon.

This may sound naive to cynics. Could be. But while the affairs of mankind are in a sorry state, it is also true that everywhere one cares to look there are signs of human integrity, courage, devotion, toughness in the face of adversity, persistence to the end of social betterment, inventiveness in dealing with what is novel. One does not have to be religious in outlook to accept this reality; it can be taken objectively as a fact to be reckoned with in organizing and promoting a scheme like the Model.

What can be said about the farmers when they take over in fifteen to twenty years is even more speculative than observations about the original investors. If they had the enterprise today, they more certainly would be cheated out of it very shortly. Given a decade of training, guidance and good example, they could readily come to recognize a good thing and guard it zealously. Farmers are not fools. If the policies of the Model work in their interests over the years, surely these policies will stick and be changed with caution. Beyond this sense of what is possible, even probable, no more can usefully be said.

Chapter 3 - Part V

ARE THERE TAX EXEMPTIONS AVAILABLE TO REDUCE RISK?

ARE OTHER INCENTIVES OFFERED TO ENCOURAGE PRIVATE CAPITAL TO FLOW INTO AGRICULTURAL DEVELOPMENT?

The Model is intended to operate within existing tax law and, in so doing, to demonstrate that investment in rural development can be sufficiently profitable that special concessions are not necessary. On the other hand, it is expected that management will take full advantage of available incentives to private investors which reduce risk and which maximize return on investment.

Mexican tax laws are too comprehensive and complex to review in detail, but the following points are particularly relevant in answering the questions which headline Part V of Chapter 3, as spelled out above.

TAXES

1. Federal taxes on operating profit - The Model, at the level of profit projected will be subject to a tax of 42%. Because of its nature, it will be allowed a 40% reduction on the normal corporate tax. In response to a request for an opinion as to whether the Model might apply for a further tax reduction, legal counsel responded, as follows:

"With regard to the attitude of the Government towards granting a tax holiday...to the Model, we do not believe that the Government will favor a tax holiday in view, that, under the present tax laws, there is no basis for the granting.. At present, under the Law for Development of New and Necessary Industries, tax holidays may be granted for industrial activities...tax incentives for agriculture or cattle raising and similar activities have already been considered in the Income Tax Law which allows them deductions of up to 40% from the normal income tax paid by industrial or commercial concerns."

"It may be considered, should the Model be successful, that the authorities would study the possibility of tax advantages for similar projects, through special legislation, to make it more attractive for the potential private investors. However, we believe it would be very difficult to obtain said new legislation before the Model has proven effective..."

Thus, corporate taxes are taken as 42% less 40% in making the financial projections covering the Model. In the long run, of course, 42% less 40% is better than a 100% tax holiday for ten years, followed by the full application of 42%.

2. Miscellaneous Federal taxes - the following taxes will have to be paid by the Model:

a. \$2.56 per head per year, against the dairy herd or \$2304/year where the herd is full, assuming 600 milking cows and a taxable reserve herd of an additional 150 cows;

b. \$0.54 per cull cow sold for beef or \$54/year based on an anticipated sale of 100 animals a year;

c. \$0.77 per fattened bull calf sold for beef or \$308/year based on selling 400 such animals a year;

d. \$300 per year, based on a tax of 0.6% on the sale price of cows sold as milking animals to other dairies and the sale of 100 such animals per year valued at \$50,000; and,

e. \$0.27 per hog sold or \$2916/year based on the sale of 900 hogs per month at full production.

The total of these federal taxes is \$5882 and it is expected that the Model will be required to pay this amount when it reaches full production.

3. State and Municipal taxes - the following taxes apply:

a. \$240/year for a license to do business in Guadalajara;

b. \$0.40 per ton of grain sold (state tax) or \$8512/year based on a sale of 21280 tons/year at full production;

c. \$1.60 per cull cow sold (state tax) or \$160/year;

d. \$1.60 per fattened bull calf sold (state tax) or \$640/year;

e. \$1.60 per milk cow sold (state and municipal tax) or \$160/year; and

f. \$0.96 per hog sold (state and municipal tax) or \$10368/year.

These taxes total \$20080. It is expected that the municipal tax of \$240/year to do business in Guadalajara will have to be paid. However, based on past experience and upon the attitudes expressed by state officials, all other state and municipal taxes are expected to be waived in the interest of having the Model located in Jalisco and doing business primarily in Guadalajara.

4. Dividend taxes - As of December, 1968, the Income Tax Law provides that any income arising from profits distributed by all kinds of companies in Mexico, is subject to the tax on products or yields of capital, amounting to 15% up to \$14,400; 17.5% if income is between \$14,400 and \$21,600; and, 20% when income exceeds \$21,600. This section of the law is currently being amended to increase the tax to a flat 20%. This latter figure is used in calculating the net value of the dividends paid into the Trust. While it may be possible to obtain special dispensation and eliminate this tax on the payments from profit to the Trust, it is wholly unlikely that the original investors in the Model will be exempt from the tax under any circumstances. Insofar as the Trust is concerned, legal counsel advises that the Model corporation would first have to be formed before an application for tax exemption could usefully be filed.

5. Capital gains tax - Net capital gains are included in gross income at a reduced percent of the gains depending upon the length of time the assets sold have been held. If the assets have been held less than two years, all of the gain is subject to normal income tax. Thereafter, the taxable gain declines to zero for a holding period of over ten years. A gain may also be excluded if the proceeds are invested during the year following the sale in the acquisition of fixed assets for industrial or agricultural purposes.

Chapter 4, to follow, includes financial projections covering all aspects of the Model. It will be noted that the dividends available each year to the original investors are shown as a lump sum of cash. This is not meant to imply that the policy of management will be to pay out this money in cash; there may be many ways to handle these earnings which will maximize the net gain on investment, including adding value to the stock which may then be sold (see Chapter 3, Part IV) to other "outsiders" - that is, to others than the farmers, at a chosen time during the twenty years before the farmers become the owners. However, so many variables affect what can or should or will be done that it is impossible to project all the alternatives in any useful fashion. Thus, the financial projections merely indicate the order of magnitude of annual earnings and reflect the potential of the Model rather than a predetermined, fixed procedure for the disbursement of income.

OTHER INCENTIVES

A variety of other incentives are extant and applicable to the Model.

These include:

1. Operating losses may be carried over as a deduction from income of the immediately succeeding years, up to a maximum of five years, with certain limitations.

2. There is no restriction on the remittance of profits, the repatriation of capital or the convertibility of exchange.

3. The General Import Tariff provides for a fixed 50% duty relief on certain machinery and equipment being imported for the establishment of a new enterprise or for the expansion or modernization of an existing industrial faculty.

4. While the law specifies the annual rates of depreciation, e.g. 5% on buildings and structures, 10% on machinery and equipment and 20% on transportation equipment, higher rates may be obtained by application to the Treasury Department.

5. Crop insurance, covering natural disasters such as flood, hail, drought, excessive rain, earthquakes, fire and uncontrollable plagues, partially subsidized by the Government can be taken out for each farmer who contracts with the Model, with the latter as the beneficiary. All crop insurance in Mexico is issued by a federal corporation which is permitted to sell insurance to farmers receiving credit from either public or private lending agencies and to make the lending institution the beneficiary.

There is a ceiling on the amount insurable which, in the case of the Model, will be less than the amount of credit extended. However, since the farmer will pay the premium (as a part of the credit extended), the Model will receive a significant amount of protection at no cost.

6. Immigration policy favors the granting of entry visas for working purposes to technicians. Since these are the kinds of people most likely to be needed from the U.S. or other foreign countries to help local management bring the Model into profitable operation, this policy could be of considerable importance during the early years.

Chapter 3 - Part VI

IS LOCAL CAPITAL AVAILABLE, UNDER WHAT TERMS,
FOR EQUITY PARTICIPATION AND LONG TERM FINANCING?

The Model is intended to be financed as a joint venture between U.S. and Mexican investors in a proportion as yet to be determined precisely but likely to be such that the Mexican shareholders hold a majority but the U.S. shareholders hold a reasonable control over management. This division is desirable from a political viewpoint (gaining acceptance) and from an operational viewpoint (facilitating dealings with both private and public Mexican institutions). At the same time, it is consistent with the program of which the Model is but a beginning, to attract U.S. private investment capital into rural development throughout the world.

EQUITY

There is no question that there is adequate privately held capital in Mexico to provide a broad base of potential partnership in the Model. It is true that since the agrarian revolution of 1910, private investment has concentrated on industrial, commercial, financial and urban real estate developments and, where agriculture is involved, investors have tended to focus on the irrigated areas and on larger-scale farming and ranching operations. However, investments which depend for their success on the cooperation of small-scale farmers have been organized and do establish some precedents.

For example, the tobacco industry depends entirely on a system of contract farming; two large tobacco processors have such arrangements with over 10,000 ejidatarios and have worked this way for many years with highly satisfactory results. Several of the food processors have also developed sophisticated programs of fruit and vegetable production using contract farming methods and carefully supervised credit and technical assistance systems.

Actually, no formal attempt has been made, as of the date of writing this feasibility report, to obtain a commitment to invest in the Model on the part of Mexicans. Many people of the type to be invited to participate have been talked with informally. These are the clear indications:

1. Interest is high, higher than ever before. The root cause of this interest is the growing, persistent pressure being applied by the Government for the private sector to employ its resources to help stimulate agricultural development and to spread more wealth through rural Mexico. This is not meant to demean those who have a sincere concern for the plight of the rural poor or those who see the self-interest of their enterprises protected if the rural population is economically more vigorous. But is it an inescapable observation that the Model enters the Mexican scene at a most appropriate time and is likely to gain widespread investor support because of the determined thrust of the Government and because there is a general lack of viable projects in which the private sector can responsibly take a position.

2. Despite Government pressure and a desire to respond on the part of the private sector, investors look at projects dealing with the campesinos, especially the ejidatario, with a deep sense of nervousness. Memories of the 1910 revolution are very much alive. Rural affairs are controlled in myriad ways by law and by public institutions. There is no more sensitive political issue than agrarian reform and social justice for the campesino. Thus, when the time comes to attract Mexican partners, the question will not be whether there is money enough but rather whether they are convinced that the Government fully supports the existence of the Model in rural Mexico.

In Chapter 3, Part III, this political fact was duly noted and it was pointed out that every effort has been made to ensure acceptance of the Model at key points in the Government. Optimism was expressed over the results of this effort.

As a first test of whether or not this optimism is justified, the Governor of the State of Jalisco, of which Guadalajara is the capitol city, was approached to help in bringing together a group of potential investors from within the State, to hear a presentation covering the nature of the Model, its proposed financial structure and a request for an investment commitment.

The Governor was advised that as much as one-half of the equity participation being sought in Mexico was going to be sought in Jalisco. The need for political backing was frankly reviewed. A list of the first people to be approached was submitted for his inspection. After careful consideration, the Governor agreed to write a letter to each of these persons, encouraging their attendance and interest. The letter is carefully worded, as is proper and prudent...but the support is clear. As this feasibility report is being finalized, plans are being drawn to organize a local investment promotion program to be initiated in the early Spring of 1969.

3. Mexican investors, in addition to their need for assurance that the Government supports the Model, will be much easier to attract after investors from the United States make their commitment. The reasons for this are not entirely clear. Reduction of risk is involved. The feeling that management and technical know-how will be more assured is also active. Other more subtle reasons might be hinted at but such speculation serves no purpose. The fact is as stated. For this reason, investment promotion is currently concentrated in the United States and the effort to find Mexican shareholders will be expended afterwards.

LONG TERM FINANCING

Long term financing presents no special problem. The banking system in Mexico is strong and diversified. United States and other foreign banks are well represented. Loans may be negotiated in dollars or other foreign currency, or in Mexican pesos, depending upon the most favorable rates of interest and other conditions. In the financial projections of the Model, included in Chapter 4, interest rates on long term loans are calculated at 9% per year, including all charges. It may be possible to borrow at lower interest but in view of rising rates as this report is being written, the use of 9% seemed appropriate.

With respect to the attitudes of the bankers of Mexico toward the Model, a survey was made among all the leading Mexican and United States institutions. Without exception they all expressed interest in the Model and a belief that financing could be arranged in Mexico.

To the extent that the cost of money is competitive, priority will be given to obtaining long term financing in Mexico. If this can be done, the Model can be an instrument helping the private banks meet the demands of Government to expand agricultural lending and thus further enhance the image of the Model in everyone's eyes. The particular means of obtaining loans under the most favorable conditions, is to take advantage of the discount program offered by the Bank of Mexico (the central bank) through Guaranty Fund for the Development of Agriculture, Livestock and Poultry (Fondo de Garantia, Fomento de Agriculturay Ganaderia y Avicultura).

The Guaranty Fund is actually a Trust, the monies of which derive from the Government of Mexico and long term loans from the United States Agency for International Development, the Interamerican Development Bank and the World Bank. In operation, the Fund applies its resources through the private banking system and would work this way, insofar as the Model is concerned:

1. The Model would apply for a loan through a selected private Mexican Bank.
2. With the assistance of the private bank, approval of the Model and its loan application would be sought from the Guaranty Fund. The Fund would review the project and, hopefully, grant approval. In granting approval, the Fund would designate from which of its sources of money it would support the loans to the Model. This is critical, since the types of

projects which can be supported vary with the original source, as does the rate of interest which the private bank can charge. For example, on term loans covered by funds deriving from the U.S. Agency for International Development and the Interamerican Development Bank, the interest rate to the borrower is 7% per year; it is 10% when World Bank or Government of Mexico monies are involved and only in the case of World Bank Funds can money be borrowed to build rural industries.

3. The private bank making an approved loan to the Model is then privileged to discount up to 90% of the loan, at the Bank of Mexico, so that only 10% of private bank funds are out.

The discount rate varies from 4% to 7%, again depending on the source of support used by the Guaranty Fund, as well as on other conditions. It should be noted, further, that the Guaranty Fund does not actually guarantee the private bank loan; this loan must be repaid by the private bank irrespective of the relationship between the private bank and its client. The system is intended to provide a financial incentive encouraging agricultural lending by the private banks and it has proven increasingly successful in this regard over the past few years.

Over the past year, discussions have been held at the Bank of Mexico and with staff of the Guaranty Fund. There is every indication that loan approval would be granted to cover an application by the Model. Until the Model exists, nothing more can be accomplished.

The major part of the equity and long term loan will be obtained in the second year when construction of the dairy and swine facilities begins and the first livestock is shipped from the United States.

These investments are deferred until the second year in order to ensure management that cooperation among the farmers and the ejidal communities in placing their land under administration by the Model is achievable. Gaining this cooperation and reaching new high yields of corn grain is the cornerstone of the entire project. No matter how profitable a dairy and swine enterprise can be said to be in the area of Guadalajara, this particular operation is meaningful only if it is successfully integrated with the system of farm management credit, technical assistance, marketing and shareholding being planned. The first year demands full concentration on the entry of the Model into the economic, social, technical and political environment of the valley.

Equity is planned at U.S. \$460,000. Long term borrowing is planned at U.S. \$500,000. In traditional financing terms, this ratio, 0.92 to 1.00, would preferably be reversed; indeed, some might argue the need for the equity to be considerably higher than the loan. This is precisely one of the points where new flexibility in financing must be exercised if the concept of the Model is to become functional throughout the world. The loan proposed, as will be noted below, is reasonable in relation to existing collateral and requires very little stretching beyond normal banking practice. Equity investment in Model-type projects, on the other hand, must be kept to a minimum because:

1. This type of investment is new and the risk of making it must be minimum if it is to be made at all...said differently, the amount of money risked should be at the lowest possible effective level.

2. This type of equity should be recoverable in the shortest time possible, in order to make such funds available for additional projects. The hope is that those who invest in the Model will, in reality, be the first to invest in the general program of development symbolized by the Model. Thus, as these pioneering investors profit satisfactorily from their initial experience, they will be prompted to keep their capital working in agricultural development, multiplying the impact of their money, management skill and of the Model itself.

3. The lower the equity, the simpler it is to earn a satisfactory return on this capital even while maximizing the benefits to the farmers. So long as the long term loan, whatever its relative size, is properly secured, then the lower the equity and the more widespread is the possibility of applying to the Model to diverse types of agricultural development situations.

The long term loan is planned at \$500,000. Equipment and livestock with an estimated at-cost value of \$624,000 will be offered as collateral. Current practice in Mexico indicates that banks will lend 70% to 80% of market value on the type of livestock and equipment the Model will possess, resulting in a ratio of assets to loan of from 0.87:1.00 to 1:00 : 1.00. It will be noted that over the first 4 years, the Model will invest \$381,000 in buildings. These buildings are considered to have no value as collateral since they will be located on communal land held by the ejidos involved. No real estate will be owned by the Model. In case of failure, the structures cannot readily be sold or rented; they would be some salvage value to the buildings but this is not recognized by the banks as a useful asset.

Chapter 3 - Part VII

WHAT IS THE NATURE AND MAGNITUDE OF THE SHORT TERM
(CROP SEASON) CREDIT SYSTEM REQUIRED TO FINANCE THE
IMPROVED CORN PRODUCTION PRACTICE?

IS SHORT TERM FINANCING AVAILABLE TO COVER THE
AMOUNT OF CREDIT NEEDED?

HOW CAN THE RISK ATTENDANT TO THE SHORT TERM
CREDIT SYSTEM BE KEPT AT AN ACCEPTABLE LEVEL?

The availability of short term credit at a reasonable rate of interest to finance both the new system of corn production to be practiced under Model management and the emergency personal requirements of the farm family, is the keystone of the entire program denoted by the Model. With credit, success is predictable. Without credit, no amount of long term investment capital will make any difference.

On the Nature and Magnitude of the Credit Program

The financial projections shown in Chapter 4 do not reveal any detail about the amount or the purpose of money to be extended on credit during the crop season. No losses are assumed, in the belief that there will be no losses or, if there are, that these will have been protected by guarantees of some sort provided by the Government of Mexico. No special charges attributable to the credit program are isolated since the staff of the Model will be administering this program along with all other duties. The entire credit transaction is consummated each year, all money going out and all money coming in being balanced and no profit or loss taking place. Therefore, the following picture

of the nature and magnitude is presented at this point for the sake of completeness, as well as understanding.

There are three distinct components of the credit to be extended to each farmer:

1. practice credit of between \$128 and \$152 per hectare (based on normal retail prices), depending upon the incidence of insects and the yield, the latter affecting the cost of harvest, degrading and transportation to the market;
2. personal credit of current nature of \$96 per year per farmer; and,
3. credit against the outstanding debt of each farmer to money-lenders, in the amount of \$120/year for the three years from the time a farmer enters into a contractual relationship with the Model.

Practice credit needs are obvious and cover seed, fertilizer, pesticides and out-of-pocket labor costs to the farmer (the farmer is not paid a wage, the value of his labor being determined by his net return on grain sold to the Model).

The inclusion of personal credit for current needs results from a less obvious situation. In rural Mexico, as is generally true in the backward agricultural areas of all the less-developed countries, most of the cash requirements of the peasant families is supplied by individual

moneylenders. There is no way of knowing exactly how much of all rural credit in Mexico is supplied by the moneylenders but it can be said safely that most of it comes from these sources; at the site of the Model, it is estimated that 90% or more of the cash needed per family, per year is so derived. Interest rates vary up to 150% and more per year; the average in the valley of the Model is from 3.5% to 4.5% per month. However, this backbreaking burden is borne by the people because their survival depends upon the moneylender. There is no other source of ready cash available, not just for seed and fertilizer and farm labor but as well for clothes, food, emergency medical care and other things which in the culture are of vital importance, e.g. spending what it takes to put on a proper wedding for one's children.

Thus it is that if the Model expects the farmers to accept it as a source of practice credit instead of the moneylenders, then the Model must protect the farmers from the threat (a very real threat and one that has been applied against farmers using public agricultural bank credit which is extended for farming practice only) of having their source of personal credit cut off or having interest rates on such loans raised to the point of despair. The \$96/year family noted above as the amount of such personal credit which the Model must anticipate is based on the results of the study of the lives of the people in the valley, referred to in Chapter 3, Part III.

The inclusion of a loan to apply against the outstanding debt of each farmer cooperating with the Model is for more subtle but no less impor-

tant reasons than those relevant to financing current personal needs. Typically, the farmers in the valley go deeper into debt each year to the moneylenders. High interest rates are partly responsible. Erratic harvests due to poor practices are also involved, as is the limited opportunity to find off-farm employment. The situation is exaggerated by ever-larger family size (more children, less death at birth or early age, increased longevity, decreased migration to the cities). Under these conditions, it is very difficult, if not impossible, to save and build towards economic freedom. This long term debt simply must be wiped out as quickly as possible so that the impact of the Model can be dramatic and meaningful to the people . . . and, importantly, so that the credit societies referred to later in this section of Chapter 3 can be accelerated into existence.

There is yet another reason to assist cooperating farmers in paying off the moneylenders and that is to help win and maintain their loyalty to the Model. These farmers, who to outsiders often seem ignorant and irresponsible, are in reality intelligent, shrewd and keenly aware of the financial deadend into which they are locked. As expressed to interviewers, the single most urgent desire of every family is to get out of debt and pile up some savings so that they can better educate and raise their children, improve their homes and build a better community. For the Model to offer to help get rid of debt, as well as to lead the way to cash surpluses, unquestionably will influence acceptance of the corporation and will encourage on-going responsibility to assumed obligations.

Note that for each \$120 of past debt paid off, the farmer will save from \$36 to \$48/year, on the average, in interest. This can be as much as from 10% to over 30% of his total annual income from farming.

Therefore, in a spectacular gesture and one calculated to facilitate reaching the goal of 400 participating farmers in Year 1, the Model intends as well to offer to take up U. S. \$120 of accumulated debt, to be repaid at harvest and to repeat this each of the first three years of cooperation, if need be, to help every family get rid of this debt and the terrible pressure of high interest rates which has drained away any possible savings. In this way, the farmer substitutes 1%/month or less for 3.5 to 4.5%/month interest, and, out of new high levels of income at harvest both reduces his debt and ends up with more cash than ever before. In no other way can real savings start to accumulate. It is expected that within several years, the major part of past debt will have been wiped out and that the Model will have helped establish community credit societies which will take over all personal credit activities. At some-time in the future, these credit societies may well be able to take over the total operation of the farm practice credit system but this prospectus makes no assumption that this will be the case.

In summary, the cash requirements of the credit system are as follows:*

Year 1

- 1,600 hectares need U. S. \$128 each for the practice
(U. S. \$24 in addition made available in the form of
no interest lines of credit \$205,000
- 400 families are relieved of U. S. \$120 each of
past debt 48,000
- 400 families are estimated to need U. S. \$96
each for new family emergencies 38,000
- Total \$291,000
- Total to be repaid at harvest, including \$24/hectare
advanced from lines of credit and all interest
charges** \$356,000
- Income of farmers from sale of corn to Model
out of which credit repaid \$461,000

Note: The \$120 will not be paid until the crop is planted and appears in good condition, in order to reduce risk. In this regard, it is unlikely that much of the \$96 will have been drawn down before this time and, unless the crop looks good, personal loan requests probably would not be OK'ed by the Solidarity Group as a whole. This still further reduces risk.

* These are cash requirements of the Model. Most of the credit will be extended to the farmers in kind, that is, in the form of seed, fertilizers, agricultural chemicals.

** All credit and interest charges are repaid at harvest time in the form of grain. Interest is calculated on the basis of 8 months duration of practice credit and 12 months duration of personal credit.

With respect to the cash required for the credit system, the amount might be reduced in these ways:

1. It may be possible to obtain a discount of 10% or more on fertilizer cost, saving roughly \$5 to \$6 per hectare. Fertilizer imports and production is controlled by a federal government corporation (Guanos y Fertilizantes de Mexico), limiting the discounts suppliers are able to offer.

2. It is possible, for a 40% cash payment, to finance the remaining cost of fertilizer with the supplier at a charge of 1% per month on the unpaid balance. This is the same cost of money as would apply if the cash were borrowed from a private bank. If this practice were followed, it might not be possible to cover the risk with the type of guarantees to be discussed later in this section of Chapter 3. However, the cash needed could be reduced the first year by \$38,000; the second year by \$116,000; and, thereafter by \$141,000 or roughly 25% of the total required. This, in turn, might make it easier to get the guarantees sought and should be kept in mind in negotiating with the Government.

On the Questions of Available Financing and Acceptable Risk

Money is available in Mexico at 1% interest per month to finance the requirements of the Model for crop season credit to be extended to the farmers. In tapping credit sources, however, two related problems must be resolved, as follows.

1. Since the farmers are ejidatarios in the communal farming system, they can offer little or no collateral against loans and the question arises as to how the risk of lending to such people can be minimized. Specifically, the situation will be as follows, assuming that the farmers, who own no land, will not have any equipment or other saleable assets to offer as collateral:

- Year 1 - \$240,000 cash required; no collateral.
- Year 2 - \$582,000 cash required; available collateral at year end equal to 70% of the value of inventory of animal feeds or roughly \$15,000.
- Year 3 - \$694,000 cash required; available collateral in the form of feed inventory equal to roughly \$58,000.
- Year 4 - \$646,000 cash required; collateral at \$100,000.
- Year 5 - \$580,000 cash required; collateral at \$117,000.
- Year 6 and after - \$573,000 cash required; collateral at \$117,000.

Note that if 60% of the fertilizer requirements are financed by the supplier and if the inventory of animal feed concentrates is offered as collateral at 70% of its market value (current practice), the amount of cash required for the credit system which has no collateral behind a loan, is substantially reduced.

2. Since the Model intends to finance the credit through private banks as a basic tenet of the scheme it symbolizes, the question arises as to how the residual risk of extending credit to ejidatarios can be eliminated in the eyes of the private banks.

With respect to dealing with ejidatarios, it must be stated frankly that despite the existence of legal instruments which formalize lending procedures between farmer and private sector lender, contracts alone simply are inadequate in ensuring the full repayment of loans. Experience in Mexico is conclusive on two points in this regard: first, it is rarely desirable or effective to enter into credit arrangements with individual ejidatarios; and, second, credit systems work very well and repayment history is excellent when groups of ejidatarios band together with mutual responsibility and when close supervision is exercised by the lender.

Early in the feasibility study of the Model it was recognized that there would be no way to prove directly that the ejidatarios in the project site would be good credit risks. True, the socio-cultural analysis of these people, summarized in Chapter 3, Part III, revealed a fairly satisfactory record on the part of the few who had borrowed from public agricultural credit banks over the years (satisfactory in the light of a total lack of technical assistance and credit supervision). However, the majority had borrowing records only with individual moneylenders and, as is well known, the moneylenders get paid, sooner or later; farmer survival depends on it.

It was decided, therefore, that it would be useful and important to a potential investor at least to know the record of repayment evidenced throughout Mexico, under analagous circumstances to those in which the Model would operate. To this end, a detailed study was made of how credit flows to the small-scale farmers of Mexico from both public and private sources, with what results. This study forms the basis for all conclusions, points of view and suggested procedures included herein. * The full report on agricultural credit experience in Mexico will be available as a supplement to this feasibility report by June, 1969.

* In addition to the financial support received from the U. S. Agency for International Development, the study of agricultural credit was facilitated by a grant from the Ford Foundation.

In the organization of the Model, a technical supervisory staff of agronomists and technical assistants is planned which will provide a very tight network of day-to-day supervision throughout the crop cycle from land preparation to the delivery of the grain to the Model for final marketing. Partly to test acceptance of such control, corn was grown during the seasons of 1967 and 1968 (and further work is proceeding into 1969) under close supervision and it is clear that the farmers welcome it, learn fast and recognize the benefits which accrue to them when they cooperate.

In addition to supervision, the risk of dealing with the ejidatarios will be further reduced by entering into credit-marketing contracts with groups of farmers, rather than with each farmer separately. There are two arrangements which are possible.

1. Form ejidal credit societies in each community in the site area and pass credit through these organizations. There are several advantages to this system:

a. they are regulated by federal law and while this does not guarantee loan repayment, it does tend to formalize the acceptance of responsibility;

b. the law requires that each borrower pay a flat 3% of each loan to the society in order to build-up capital to the point where the society is self-financing;

c. the society requires the farmers to organize a Board of Directors, thus providing a training ground for management of more complex operations, such as the Model;

d. the society must pay its officers for their administrative activities which establishes precedent for the payment for management services if these are judged desirable by both the management of the societies and the management of the Model;

e. in ejidal credit societies, the members are individually and jointly responsible for all of the debts of the organization, which is a device under the law permitting such societies to be formed with no initial capitalization (in all other cases, credit societies must be organized as stock corporations of variable capital by the farmers concerned and must have a minimum paid-in capital of from \$20,000 to \$40,000, as determined by the National Banking Commission);

f. the management of the Model need deal directly only with the officers and Board of Directors of a society, greatly simplifying relationships with the entire community; and,

g. by making the credit society the responsible agency for receiving, disbursing and collecting, the Model is protected from criticism that it is in any way manipulating credit funds for corporate advantage and also simplifies the task of administering the credit system.

2. Form "solidarity groups" of from 6 to 12 members each, as a form of micro-credit society and pass credit through such groups.

The advantages of this system may be summarized as follows:

a. while recognized as legally responsible bodies, the solidarity groups are not regulated by law and can be organized quickly, freely and with no involvement in government bureaucracy;

b. the groups are small and lend themselves to organization around family and friends, tending to minimize friction and maximize loyalty to one another and to the group in meeting responsibilities;

c. in communities where there is no history of the organization of credit societies, the solidarity group offers an attractive means of educating the people to credit operations, as a first step toward more sophisticated organization of credit societies;

d. the members of a solidarity group are jointly responsible for all individual debt; and,

e. the members elect a leader who represents the group in all relationships to the Model, thus providing a simple procedure for dealing with the whole.

Neither credit societies nor solidarity groups have existed before in any of the communities to be dealt with by the Model. After a careful review of the problems attendant to organizing one or another of these methods of extending credit, it is recommended that the Model begin with the simpler of the two alternatives, namely with the organization of solidarity groups and proceed as rapidly as possible to catalyze the creation of credit societies covering each community.

Organizing and relating to solidarity groups requires no innovation on the part of the management of the Model. Standard contracts exist and are in widespread use. Combined with supervision, such contracts function with complete effectiveness. An outstanding case in point is illustrative and persuasive in this regard . . . in the tobacco producing area of the State of Nayarit, adjacent to Jalisco, one private corporation extends annually roughly \$7 million in credit to over 5,000 ejidatarios organized into solidarity groups. No collateral is required. The contract with each group specifies farming practice in detail and the farmers must yield to the direction of supervisors from the company. The entire crop is contracted and the tobacco is delivered to the company at designated points and is subject to inspection and grading. Between 1960 and 1969, the total credit extended has been roughly \$34 million; losses have been less than \$1,000 or essentially zero in this time, due to deliberate lack of repayment!

With respect to obtaining short term loans from the private banks, despite the argument based on experience that ejidatarios can be so organized as to reduce risk to zero, the fact remains that loans of the size needed by the credit operations of the Model simply will not be made by private banks without acceptable guarantees.

There are two visible ways of obtaining the guarantees required:

1. The investors in the Model could guarantee the short term loans, using their good names on notes, if this is acceptable to the banks or otherwise providing the necessary collateral.

This would be the simplest, most direct way to finance the credit. It is not likely that the investors will choose this route. The Model is a pioneering venture and taking 100% of the long term risk may be all that should or can be asked of the original shareholders. In any event, a decision one way or the other need not be faced until the second method of obtaining the desired guarantees is thoroughly explored.

2. The Government of Mexico could guarantee the short term loans.

While less simple a route to follow, there is both reason and precedent to suggest that it be followed and that there are grounds for believing it can be followed to a successful end.

The reason for seeking a government guarantee goes beyond the financial needs of the Model to the general issue of how best to attract private investment capital into agricultural development in the underdeveloped countries of the world. It is an unfortunate truth that at this moment in history, private capital must be attracted. It will not flow spontaneously in any significant quantity. Incentives must be created. One may argue endlessly about what is "just", what is "true" or what "must" be. The fact is that private investors in the developed countries--and, indeed, private investors in the underdeveloped countries--regard the rural areas of the world with considerable trepidation.

If, to overcome these fears and to get a commitment to bring investment capital and management into agricultural areas, Government provides guarantees to eliminate the risk of losses on short term credit, this would seem to be an ideal, creative partnership between public and private sectors. Little or no new public funds will be demanded. At practically no cost, the service of a Government to its people can be expanded. The act can be an elegant expression of the faith and pride a nation takes in its own people.

Fortunately, the value of using a government guarantee to encourage the flow of private bank credit to ejidatarios has been recognized and there are precedents to cite which favor the extension of similar guarantees to cover the credit system of the Model. While not in common use, the procedure to be followed, after the Model is incorporated, is as follows.

1. application for approval is made to the Ministry of Treasury and Public Credit;
2. the Ministry requests approval of the Bank of Mexico, Guaranty Fund for the Development of Agriculture, Livestock and Poultry; and,
3. if all approvals are obtained, the Ministry authorizes the appropriate public agricultural credit bank to extend the necessary guarantees to the private bank involved.

This procedure and the possibility of utilizing it successfully have been discussed at length at the Bank of Mexico and the Banco Agropecuario, the central agricultural credit bank. While officials could not respond definitely to a hypothetical situation, both sympathy and appreciation of the problem were expressed, along with assurances of help at the proper time.

It may be noted that the approval of the Ministry of Agriculture, while not required formally, is, in reality of critical importance in getting the loan guarantees requested. The Minister of Agriculture has maintained a steady interest in the Model project. It was he who officially and in writing welcomed the study group into Mexico and commended the importance of the concept of the Model to agricultural development everywhere. Since the work began in Mexico, the Minister has been encouraging and helpful. There is every reason to expect that the Ministry will remain positive in its orientation.

It is conceivable that the Government might wish to take another route to the end of supporting the short term credit system of the Model, which, though less desirable philosophically, and less secure, also does have precedents in the Mexican experience.

1. a government agricultural credit bank actually extends part of the credit required, rather than guaranteeing credit passed through the Model from a private bank;

2. the Model finances the remainder of the credit required;

3. the public bank then issues what is known as a "carta de prelacion" to the Model which subordinates the rights of the public bank to loan repayments or collateral to the private lender, in this case, the Model or whatever agency is used for the purpose, e.g. a credit society; and,

4. while the Model guarantees to the private bank repayment of that part of the credit it extends, the major part of the loans made to farmers and the largest part of the risk is taken by the public bank.

The Model is in a unique position to encourage a public bank to offer the use of a "carta de prelacion". The field staff of the corporation can integrate the flow of credit from the two sources and administer the system, thus relieving the already overburdened public institution of this task. Further, the Model can provide 100% of the technical assistance and can organize the collection of repayments . . . functions built into the organization anyhow. Since the very close supervision of crop practice and credit planned by the Model is expected to reduce losses essentially to zero, the method of financing short term credit which takes advantage of the act of subordination on the part of a public bank has much to commend it, if 100% guarantees cannot be obtained.

Finally, with respect to reducing risk on crop season credit, it was noted in Chapter 3, Part V, under the listing of incentives to investors, that crop insurance is available partially to cover losses due to crop failure caused by natural disasters such as drought, excessive rainfall, floods, hurricanes, hail, and uncontrollable plagues. There is only one source of such insurance, namely, the National Crop and Livestock Corporation, a federal government agency. This agency establishes a ceiling on how much coverage it offers; for 1969, this coverage will amount to roughly two-thirds of the amount of crop practice credit which would be required to apply the practices recommended by the Model. However, no matter what the sources of credit which are finally utilized by the Model, all loans for the short term will require that the farmer take out and pay for crop insurance to the maximum coverage and that the Model be designated the beneficiary of any payments in the case of crop failure, to the amount of unpaid debt of the insured. Under the current practices of the National Crop Insurance program, this procedure is well established. The burden on the farmer is light, since the premiums are subsidized. For example, at the site of the Model, maximum coverage is \$100 per hectare and the premium is \$13.75 per hectare; of the premium the ejidatario pays only \$5, the Government paying the Insurance Corporation the balance. Assuming a yield of 5 tons per hectare under the Model system of production, this is a cost of \$1/ton or 1.6% of the price per ton the farmer will receive.

Chapter 3 - Part VIII

IS THERE A STABLE MARKET FOR THE PRODUCTS OF
THE MODEL WHICH ALLOWS FOR REASONABLE
PREDICTIONS OF BOTH SALE AND PRICE?

The primary products of the Model are corn grain, raw milk and live pigs. The secondary products of the Model are live fattened bull calves for beef, cull milking cows for beef and surplus milk cows for improving other herds in the area.

The market for secondary products has been examined carefully but not in depth. The amount of these products coming from the Model is very small in contrast to the requirements of the Guadalajara and regional market and may be thought of as a demonstration of what is possible rather than as an important new source of supply.

With regard to beef, which is intended entirely for higher income consumers in Guadalajara, there is a recognized and growing shortage of high quality product available to the hotels, better restaurants and supermarkets and throughout the trade there is interest in new local sources of supply. The fact is that in the entire region around Guadalajara, there is no high grade livestock industry. Local sources of supply yield only range animals with no breeding history and very poorly fed; there is one feed lot operation which takes range animals and fattens them over a period of 30 to 45 days, on contract to buyers in Guadalajara who subsequently arrange for their slaughter and butchering in the one good abattoir serving the city.

The milking herd of the Model will be Holstein in breed. As a result of research done in the United States in recent years, this breed is now recognized as one of the finest beef animals available, both from the standpoint of quality of meat and from the standpoint of efficiency of conversion of feed. Thus, by starting with a carefully selected milking herd and by maintaining the highest standards of feeding and health control, it is expected that the Model can produce the most attractive beef animals in the area, at a cost which will permit a most satisfactory return on the investment (a calculation of the profitability of fattening bull calves is included in the footnotes attached to the financial projections of the Dairy Division of the Model).

Interest has been expressed in Guadalajara in buying the beef animals of the Model, on contract. The system which is standard in this market is for the buyer to arrange on his own to slaughter at the official abattoir. The Model, therefore, will be in the live animal business only.

The price of beef is stabilized by government control of meat prices at the retail level. Behind the retail outlet, no price controls exist. This has the effect of reducing interest in breeding up and feeding out superior beef animals for the Guadalajara market since feed and all other costs are high per pound of beef on-the-hoof, in relation to what the butcher shops can afford to pay. The Model is, as a consequence, placed in a favored competitive position and it is exactly this point that the beef operation is intended to demonstrate. The dairy herd

will exist, in any event, and the investment in this herd will be justified primarily on the grounds of returns from the sale of milk. With efficient management, the throw-off of cull milk cows and the fattening of bull calves can yield a lower cost, higher quality beef animal than is true of any other source serving the market, simply because of the lack of well organized, modern, integrated livestock enterprises in the area (note that the development of a well financed, well managed beef livestock industry in Mexico has been concentrated in the northern parts of the country which primarily serve the market in the United States).

General opinion in the trade is that if prices change in the future, they will go up. Beef production simply will not expand proportionately with urban demand unless it becomes more profitable. Naturally, the Government tends to resist a price rise at the retail level since it wishes to expand meat consumption as part of a general plan to improve the quality of the Mexican diet. One break in this impasse is visible, however, which will work to the advantage of the Model. In light of the demand for quality beef by hotels and restaurants serving the tourist trade, the resident foreign population and the growing number of well-to-do urban Mexicans, some concessions have been made by the Government which allow higher prices to be paid for top quality beef sold into these selected markets. It is true that one purpose of the Model is to demonstrate how to profit even while decreasing the cost of food and increasing the quality of available foodstuffs. Yet, the Model, as a pioneering venture, must succeed if it is to lead the way and management may wish to maximize profit in the urban marketplace in order to maximize benefits among rural producers.

In any event, both the needs of the market for beef and the price structure which is prevalent and predictable, clearly indicate the opportunity offered to the Model if it proceeds into beef production.

The market for surplus milk cows has been assumed from current conditions without further analysis. Small scale dairying is becoming more widespread and is being encouraged by the Government. Attempts by the Government to improve herd quality are also becoming more widespread, with attendant efforts to provide financing and technical assistance. No one knowledgeable about trends in dairying in the area which might be served by the Model doubted that a growing market exists for high grade milk cows or that prices for good animals would go anywhere but up. Further, it was agreed that the Model dairy, unique in size and quality in the area, would create its own market merely by visibility. The dairy will be among the finest in Mexico; it will be the largest in the area around Guadalajara. In purchasing animals in the United States, rigid and specific standards will be set and detailed production records will be kept. This background on every animal in the dairy will be available to prospective buyers of surplus animals and, on the whole, these animals should be very attractive to dairymen, to government agencies sponsoring milk production and to banks financing stock . . . and, as in the case of beef, the sale of superior animals, whether for slaughter or for herd improvement, will further dramatize the importance of properly capitalized, soundly managed organizations in the development of self-sustaining rural economies.

The market for major products corn, milk and pigs was studied in depth. The results of these studies are summarized below.

A. CORN GRAIN

A 1. Grain will be purchased from the farmers for U. S. \$64 per ton, which price includes the cost of transport to Guadalajara. All grain sold to the wet milling and crushing industry will be supplied in bulk, saving the farmers roughly U. S. \$2.48 a ton over that grain which must be bagged. Only corn sold to the producers of masa for tortillas will be bagged. U. S. \$64 per ton is roughly the average price for corn now received by the farmers in the valley, after bagging and transport.

A 2. All grain will be sold into the open market immediately upon reaching a moisture content of 14% based on dry weight. * At this

* As noted in paragraph A 4 to follow, there is a government price support program which is maintained by a purchasing system administered by a Federal Government entity. The Model will not sell corn to this entity even though it could and, in so doing, get a higher price for the grain. The government program is aimed at increasing the cash income of the hundreds of thousands of small-scale farmers dependent on this crop. Federal resources for this purpose are scarce and it would be a denial of the objectives of the Model to profit at the expense of the Federal treasury and to further limit financial support to the masses of rural poor. The Model intends to demonstrate that there is profit enough for all concerned to be made from the application of superior corn growing practices and from organized distribution into the open competitive market, to eliminate the role of government support prices, at least in selected areas.

moisture level, there is no penalty charged by the buyers. Furthermore, control of this factor will place the Model in an advantageous marketing position with the industry in Guadalajara. In the pressure to sell grain and get cash, a great deal of corn is delivered in Guadalajara at a moisture content above 14%. To minimize rot, the industrial buyer must go to the expense of drying the corn; in any event, losses occur. Industrial buyers have stated unequivocally that they would give preference to grain delivered by the Model if quality control were exercised over moisture content.

A 3. The market for the grain will be among the wet millers - crushers (called "industry" hereafter) and the producers of masa for making tortillas (called "millers" hereafter). This market has been growing at about 10% per year, giving this picture of demand:

Metric Tons Per Month - Rounded

<u>Market Year</u>	<u>Industry Demand</u>	<u>Miller Demand</u>
1965-66	12,000	5,000
1966-67	13,200	5,500
1967-68	14,500	6,000
1968-69	16,000	6,600
1969-70	17,600	7,300
1970-71	18,400	8,000
1971-72	20,200	8,800

Thus, by the end of 1970, the earliest date at which grain from the Model could enter the market, the demand from October 15 to January 15, when it is planned to sell the entire Model supply, will be roughly 79,000 tons. In addition, new storage facilities completed in 1969

by the second largest industrial user will permit local purchase of an additional 15-20,000 tons during this time. The Model will have 6,800 tons for sale at the end of 1970. The marketing picture, from the time the Model first starts selling corn, may be illustrated as follows:

<u>Marketing Period</u>	<u>Market Demand</u>	<u>Model Sells</u>	<u>% of Current Demand</u>
1970-71	99,000	6,800	7%
1971-72	108,000	17,500	16%
1972-73	119,000	21,280	18%
1973-74	138,000	21,280	15%
1974-75	152,000	21,280	14%
1975-76	167,000	21,280	13%

In calculating earnings and cash flow, it is taken that the Model will sell its grain at 900 pesos per ton (U. S. \$72). This selling price is equal to the lowest average price paid by industry during the period October - January. In 1966, 1967 and again in 1968, the price structure for corn was this:

<u>Month</u>	<u>Average Price Paid per Metric Ton in Pesos</u> (1 peso = 8 U.S. cents)	
	<u>Industry</u>	<u>Millers</u>
October	935	960
November	900	930
December	900	940
January	910	940

A 4. Every expert source of information contacted, in public and private institutions, believes that this price structure for corn in Guadalajara will remain stable in the predictable future. Corn prices are largely based on the government support price of 940 pesos per ton,

paid by CONASUPO (Compañía Nacional de Subsistencias Populares). *

In Jalisco, of a consequence, prices lower than 940 pesos are only reached during the peak of the Jalisco harvest, when the need for immediate cash may encourage a slightly lower price or when there are compensating advantages to the seller, e.g. selling to industry in bulk and saving 30 or more pesos per ton in handling, bagging and more rapid transport. The CONASUPO price support program in Jalisco is so fundamentally important to the rural economy of the area that its withdrawal is difficult to imagine and a lowering of support price extremely doubtful.

A 5. A quick examination of trends in corn grain production in Mexico and in the areas supplying grain to the Guadalajara market will further support the statement that prices in Guadalajara will be stable or will rise rather than fall.

	<u>Corn Grain Production - Thousand Metric Tons</u> ^a					
	<u>1961</u>	<u>1962</u>	<u>1963</u>	<u>1964</u>	<u>1965</u>	<u>1966</u> ^b
National	6,246	6,397	6,424	8,454	8,500	7,500 - 9,500
Jalisco	1,599	1,571	1,506	2,020	2,217	1,700 - 2,500
Tamaulipas	225	251	156	403	376	-
Sonora	94	70	71	121	103	-

^a Source of all data except estimates for 1966: Almacenes Nacional de Deposito, S.A., Informe Anual a La Asamblea de Accionistas for 1964-65, published in 1966.

^b Estimates from various public and private sources obtained during interviews.

* CONASUPO is a federally operated corporation. It buys, arranges to store and sells grain (among other crops) and attempts to put a floor under corn prices. It actually handles only a fraction of the crop but, in so doing, tends to achieve its goals. The impact of CONASUPO does become diluted because of middlemen who buy at lower than support prices, using the lure of cash in advance of harvest and then, even though it is illegal, sell to CONASUPO. Nonetheless, corn grain prices in the countryside have risen and have evened out in recent years.

A 6. The special relevance of Tamaulipas and Sonora production to marketing in Guadalajara is the result of seasonal variations in harvest time. The harvest in Jalisco runs from October to February in the upland areas of greatest importance. There is a small coastal harvest in Jalisco during June and July which, in terms of quality and quantity, as well as in terms of the normal direction of trade, is of little significance in the Guadalajara market. As local current supplies of Jalisco corn disappear and prices rise due to storage and added handling costs, the harvests of Sonora and Tamaulipas move into Guadalajara . . . from Sonora during February to May and from Tamaulipas from August to October. No corn grain from other producing areas enters the Guadalajara market in commercial quantities.

A 7. The implications of the data covering corn grain production may be summarized as follows.

a. The surge in national production in recent years, stimulated by a high internal support price, has taken place faster than the growth of the free market (some grain from CONASUPO is subsidized in the Mexico City area only, for use in tortillas). This growth in production has also taken place faster than the federal government has been able to provide storage facilities for a large carryover. These facts have combined to encourage a government foreign export program, estimated in 1966 to ship out roughly 1.5 million tons. Under this program, corn grain is exported at prices several hundred pesos below the support price paid by CONASUPO. Thus, the disposal of corn through export is expensive in

national accounting terms. More than this, the so-called "surplus" does not reflect the real food needs of a majority of the people of Mexico, which are far from satisfied, qualitatively and quantitatively. Indeed, it may be argued that both in terms of current potential demand for corn and the demand generated by growing population (between 1960 and 1980 it is projected that the population of Mexico will double), there is a real shortage of corn which will become more pressing.

b. Because of the high cost of "surplus" corn to the nation, there is pressure to reduce corn production. At the same time, standards of living in the cities are rising, building a demand for a more varied and improved diet, less dependent on corn as a staple. In response to both of these forces and still to take into account the large and growing internal requirements for corn, the trend in national agricultural policy (more implied by action and comment than stated in official documents) appears one to discourage corn growing in irrigated areas such as Sonora and Tamaulipas where more varied and profitable agricultural practices are feasible. Indeed, in Jalisco, it has been officially announced that farmers shall not use any irrigation in the production of corn in 1968 and thereafter and a set of stringent penalties has been published to alert farmers to the serious intent of government in this respect.

c. At the same time, encouragement is being given to greater corn production under the best temporal conditions, e.g. those characterizing large sections of Jalisco. In other words, in the immediate future

and over the long pull, it is likely that more corn will be grown, indeed required, in Jalisco, though at first glance it would appear that the pressure to reduce corn surpluses would be most evident in the state producing roughly one-fourth of the national harvest. Moreover, much of the needed corn from Jalisco will continue to be produced on small farms and, if anything, this will require an enlarged CONASUPO program rather than a smaller one. Every recent action by CONASUPO, such as a greatly expanded program of construction of receiving warehouses scattered throughout the area, supports this contention. Thus, the thrust of the Model is in line with and in the direction of national policy and national policy clearly supports the argument that corn prices in Guadalajara will be at the levels shown for 1966 and 1967, or higher, in the years ahead.

A 8. One final comment may be made about the use of a selling price of U. S. \$72. It is likely that a higher price can be commanded for at least a part of the tonnage sold by the Model. However, there are two reasons to hold to this price in analyzing the feasibility of the Model. First, it can almost be guaranteed, as has been verbally stated by the two largest industrial users, that these two buyers alone would take the entire output of the Model at U. S. \$72 per ton and with moisture content controlled to 14%. This kind of security and simplicity in marketing is an important consideration in light of the pioneering aspects of the Model and the complete burden of risk assumed by the investors.

Second, the Model is intended to demonstrate profitable production at lower than traditional prices and to pass this gain to the lowest income consumers. At U. S. \$72 per ton, corn sold to the millers could make a modest but definite demonstration to this end. From the market studies made of practices followed by the millers, it is known that this is a price sensitive outlet and that a significant part of lower grain prices would be reflected in the price of masa and tortillas. The reason for this is that in Guadalajara, about 70% of the tortilla shops are integrated with milling operations and benefits in raw material costs can be passed directly on to consumers. The problem for the Model to work out with the millers involves promptness of payment, since the credit system of the Model is predicated on immediate cash payment for delivered corn. Only after the Model comes into existence and sales to the millers are attempted will it be known how quickly satisfactory marketing arrangements can be worked out.

B - MILK

B 1. Mexico has a chronic shortage of milk. Forecasts made by the Bank of Mexico estimate that the current national supply gap will widen to 365,000,000 liters by 1970 and will reach 640,000,000 liters by 1975.

B 2. Jalisco now produces roughly 10% of the nation's supply and ships nearly 50% of its production to the Federal District (Mexico City area). But, while spoken of as a "surplus" producing area, the designation is not wholly realistic and, in light of growth trends in the

Jalisco market itself, it is probable that the State will not be able to keep up with demand. It may be noted, for example, that while during June, July and August there is a great abundance, even an overabundance, of raw milk available in Jalisco, there is an extreme shortage during the rest of the year necessitating the import of milk from as far away as Torreón, 700 kilometers distant, by the pasteurizers serving the Guadalajara market.

B 3. One semi-official forecast of the supply and demand situation in Jalisco is shown below:

Supply and Demand for Milk in Jalisco *
(Millions of liters)

<u>Year</u>	<u>Total Demand</u>	<u>Total Supply</u>	<u>% Margin</u>
1965	645.2	680.2	+ 5.4
1966	677.4	709.2	4.7
1967	709.1	738.4	4.1
1968	741.8	768.9	3.7
1969	775.9	800.1	3.1
1970	811.2	832.9	2.7
1971	847.7	866.2	2.2
1972	885.9	900.8	1.7
1973	925.4	936.8	1.2
1974	966.2	974.3	0.8
1975	1,008.8	1,012.6	0.4

* Assumptions Used by Plan Lerma, Source of Data Above:

- a. Population growth rate (current rate estimated 6.9% year) . . . 4.1%
- b. Increase in per capita milk consumption, statewide 1.9%
- c. Growth rate in shipping milk out-of-state 2.2%
- d. Production growth rate, based on improvement programs projected but not yet approved or financed 4.1%
- e. Overall development and growth rate in Mexico 4.8%

B 4. In fact, precise determinations of usage and production, in total and by sector, are impossible. There are literally thousands of widely scattered small producers users are reluctant to provide concrete, verifiable numbers. Official statistics, reflecting these and other difficulties, are at best an approximation. Nevertheless, the literature and the results of interviewing widely among major industrial buyers, local government officials, research agencies such as Plan Lerma and larger producers, did reveal a basic uniformity of trends and opinions. One of the most consistent indications of the credibility gap between data such as shown and informed opinion was the skepticism expressed by major buyers that the Government of Jalisco can attain a growth rate in raw milk production sufficient both to level-off severe seasonal shortages and total shortages. Human, financial, and managerial resources required to satisfy demand are not in sight.

B 5. The best practical indication of the real market condition in Jalisco is the expression by the existing pasteurizing plants in Guadalajara of interest in contracting for the entire supply of the Model should it enter the milk production business. In evaluating this opportunity to market in such a simple, direct, inexpensive way, several factors need to be kept in mind.

B 6. During July, August, and September, as already noted, there is a superabundance of milk available in Jalisco; herd management to avoid this is nonexistent. This situation results in a real strain on the large scale buyers. During the nine months of scarcity, pasteurizers and

other industrial users must scour the nation for supplies, adding large freight costs and severely cutting profit. During the season of abundance too much milk must be bought for plant capacity. Buyers operate under the terms of "moral" contracts with suppliers, agreeing to buy all production, year round, in return for an agreement to deliver all surpluses. Thus, pasteurizers in Guadalajara resell milk to users elsewhere, e.g. powdered milk plants, who can store their product. Again, this adds cost and cuts profit margins. Therefore, in the management of the Model's herd, it would be profitable, useful, and competitively sound to maximize production between September and May. For example, supplier prices during the past year remained stable at 1.20 pesos/liter from December to June, when they dropped to 1.10 pesos/liter (some buyers are predicting a rise to 1.25 pesos/liter in the September 1967 - May 1968 period). However, because of the potential quality, reliability of contract relationships and delivery cost advantages, Guadalajara pasteurizers have indicated a willingness to pay 1.35 - 1.40 pesos/liter on a fixed price contract, to the Model all year long. *

B 7. The dairy plan for the Model envisions at first stage the production of 12,000 liters of cooled raw milk per day. Guadalajara's three pasteurizing plants have increased their combined sales from an

* The price of milk is controlled at the retail level and there are no premiums paid for quality, that is, milk is not graded by butterfat content. No price control exists behind the retail store, thus putting a profit squeeze on the small, inefficient producer. Since no quality premiums exist, the farmers of Mexico have universally gone to the high-yielding Holstein to help compensate for high feed costs and general inefficiency in dairy operations.

average of 17,000 liters/day in 1963 to about 70,000 liters/day in mid-1967. Only 15% of their supply comes from within a 100 mile radius of the city. More than this, the pasteurizing plants are operating at considerably below capacity, e.g.:

- Lecheria Guadalajara, S.A. - installed capacity for pasteurizing, deodorizing, and bottling is 100,000 liters/day; current production is 31,500 liters/day, or 32% of capacity.
- Establo Mercanizado Jalisco (a government company) - installed capacity is 44,000 liters/day for pasteurization, homogenization, deodorizing, and packaging in cartons; current production is 7,000 liters/day, or 16% of capacity.
- La Pureza, S.A. - installed capacity is 35,000 liters/day for pasteurizing, deodorizing, and packaging; current production is 30,000 liters/day, or 86% of capacity.

B 8. Despite their difficulties in getting milk year round, Lecheria Guadalajara is projecting a sales growth rate over the next two years at 20%, La Pureza a rate of 12% and Establo Mecanizado a rate of 100%. Clearly, these pasteurizing plants, even under current conditions, could (and, as has been noted in (a) above), would absorb the total output of the Model as planned. The data in the Table 1, following, support the foregoing conclusion and, indeed, present an even more optimistic picture.

PROJECTED DEMAND FOR FLUID

YEAR	POPULATION ^a (1)	PER CAPITA USE STABLE GROWTH LITERS ^b (2)	PER CAPITA USE 3% GROWTH/YR. LITERS ^b (3)	TOTAL (1) X MILLION (4)
1967	1,200,000	108.5	108.5	130
1968	1,238,000	108.5	111.7	139
1969	1,371,000	108.5	115.1	149
1970	1,466,000	108.5	118.5	159
1971	1,567,000	108.5	122.1	170
1972	1,675,000	108.5	125.7	182
1973	1,791,000	108.5	129.5	194
1974	1,914,000	108.5	133.4	207
1975	2,047,000	108.5	137.4	222

a Average growth rate 1956-1965 was 6.9% year; same rate applied to 1975

b Both pasteurized and raw milk.

TABLE 1

MILK IN GUADALAJARA AREA 1967-1975

DEMAND (2) LITERS ^b	TOTAL DEMAND (1) X (3) MILLION LITERS ^b (5)	DAILY DEMAND	DAILY DEMAND	DAILY DEMAND PASTEURIZED MILK AT 2 GROWTH RATES THOUSAND LITERS	
		<u>(4)</u> 365 THOUSAND LITERS ^b (6)	<u>(5)</u> 365 THOUSAND LITERS ^b (7)	15%	20%
130		365	365	68	68
142		380	390	78	82
157		410	432	90	98
173		435	473	103	117
191		467	511	119	141
210		500	575	137	169
231		530	635	157	193
255		570	700	181	232
280		601	770	208	278

C - SWINE

C 1. A review of marketing possibilities, feed, labor and building costs indicates that a large, carefully planned and well managed commercial type installation would be an attractive and profitable extension for the Model. High feed and initial supervisory costs make it necessary that any commercial venture into hog production be on a large scale. The subtleties of swine management and economics, however, suggest that production be built up gradually. It is therefore recommended that the corporation's swine production unit begin with 240 sows and build up over 30 months to 600 sows producing 900 market hogs per month.

C 2. Only the producers' market for live hogs is pertinent for the first phase of the hog producing unit. The marketing of slaughtered hogs or of meat cuts is complex, highly volatile and unsuited to the Model's initial capabilities. Mexico City (Federal District) and Guadalajara are the relevant markets for large volume producers located near Guadalajara; they account for approximately 17% of national consumption of hogs. A permanent and growing shortage of hogs already exists in both areas. Brokers and packers estimate that the combined market could immediately absorb an extra 2,500 to 3,500 lean market hogs per month without affecting the level or trend of prices. An additional 1,000 hogs per month could also be sold were prices to drop by 7 - 10%. These estimates appear conservative in comparison to official forecasts of current and future national production deficits (Table 2).

Table 2

**DOMESTIC DEMAND AND AVAILABILITY OF PORK
1951-1961 NATIONAL AVERAGE WITH
FORWARD PROJECTIONS**

	<u>THOUSANDS OF METRIC TONS</u>			
	<u>1959-61</u>	<u>1965</u>	<u>1970</u>	<u>1975</u>
Domestic demand	158	219	294	388
Available supply	158	195	235	275
Surplus or (Deficit).	-	(24)	(59)	(113)
<hr/>				
Related Animal Shortage	-	400,000	1,000,000	1,885,000

Assumptions

1. Rate of increase in hog production 3.0% per year
2. Upper rate of increase in hog production
assuming availability of suitable feed
grains and concentrates 4.2% per year
3. Estimated 20 year rate of increase,
calculated from census data 0.77% per year
4. Assumes rate of extraction from inventories
will increase steadily from 43.88 (Average
1959-61) to 47.78 (1965) and on to 49.71
(1970) and 50.20 (1975)

Source: Bank of Mexico

Assuming an approximately linear relationship between actual volume of individual markets and official estimates of national supplies, the Guadalajara - Mexico City market experienced a supply shortage of approximately 71,000 hogs (5,900/month) in 1965. * The actual 1965 supply deficit in the two markets, as estimated from slaughterhouse records may have been nearly double the official forecast, since total slaughters were only one half of estimates.

C 3. Future supply deficits throughout the Republic will increase rapidly in the years to 1970 and 1975 as a result of slow expansion of pork production, shortage of beef cattle, rapidly expanding population and increased family incomes, particularly in Guadalajara and Mexico City. Production may not even achieve the 3% annual growth rate projected in the Banco de México study, unless feed costs are lowered sharply and management practices are improved. Table 3 estimates the 1970 and 1975 demand in Mexico City and Guadalajara, and indicates a possible supply deficit of up to 328,000 head yearly (27,000/monthly) by 1975.

C 4. The stability in monthly market volumes and prices permit level year round production which will simplify management tasks and improve the utilization of facilities and personnel. The Model's Swine Division will plan, therefore, to operate on a level production basis producing

* Banco Nacional de México S.A., Secretaría de Agricultura y Ganadería, Secretaría de Hacienda y Crédito Público, Projections of Supply and Demand for Agricultural Products 1965, 1970, 1975, Mexico D.F. 1966.

Table 3

FORECAST OF PORK MEAT SUPPLY - MEXICO CITY AND GUADALAJARA

	<u>THOUSANDS OF METRIC TONS</u>	
	<u>1970</u>	<u>1975</u>
Demand	50	66
Supply	40	47
(Deficit)	(10)	(19)
<hr/>		
Related animal shortage	167,000	317,000

Note: The demand is taken at 17% of the total domestic demand as shown in Table 2, based on data published by the Bank of Mexico, which assumes a 3% annual rate of increase in supplies.

900 market hogs monthly when it reaches full production in the 31st month of operation. Monthly demand drops by 20 - 25% during the 40 day late February - early April, Lenten season. This variation, however, only seriously affects the small marginal producer. Otherwise, monthly volumes and price levels rarely vary by more than 5% from the mean. This is one of the main advantages of selling in the Guadalajara and Mexico City markets.

C 5. Large scale producers in the Guadalajara area sell their hogs on a non-contract basis to brokers from Mexico City or Guadalajara markets. Contract sales are rare and generally create rather than solve problems. Hogs sold for the Guadalajara market are usually sold on the farmsite to brokers. When Mexico City prices exceed those in Guadalajara by 30 centavos per kilogram, it becomes profitable to transport the hogs to the Mexico City stockyards (Table 4). Most large producers establish a price reporting system with one or two brokers in Mexico City.

C 6. Wholesale brokers and knowledgeable producers concurred that the Model could, as a minimum, expect to average 6.30 - 6.45 pesos per kilogram for premium hogs. The calculations used in evaluating the feasibility of the operation of a swine production division are all based on an average net price of 6.30 pesos per kilogram. Market prices for premium hogs should remain steady at about 6.30 pesos per

Table 4:

INCREMENTAL MARKETING COSTS FOR SELLING IN MEXICO CITY

	<u>Pesos</u>
1. Transport, based on 25 animals per truck, and one man to care for animals	16.50 per animal
2. Unloading	1.80 per animal
3. Change of ownership10 per animal
4. Taxes	3.25 per animal
5. Weight and death loss, based on 0.75 kg. per animal weight loss and 1/2% death loss	<u>8.18</u> per animal
Total	29.83 per 110 kg. animal or .27 - .30 per kg. (U.S. 2.2 cents/kg.)

kilogram of live weight until 1970 or 1971. Afterwards, if increased shortages occur as forecast, price will trend upwards. Recently, and particularly in 1967, falling lard prices and official wholesale and retail price ceilings have inhibited the higher producer prices which probably would have resulted from the increasing shortage of pork. Table 5 presents the range of actual on-the-farm prices received in Guadalajara and Mexico City by a leading large scale producer; he averaged 6.30 - 6.33 pesos on both of his farms.

C 7. It is recommended that the weight of hogs sold be 110 kilograms (242 pounds). This represents a compromise between current broker preferences (115 kilograms) and the most economical weight for feeding out. Clearly the trend and preference in both markets is for lean, lighter weight animals. Average weight per animal has declined ten pounds during the last 24 months and appears headed toward the U. S. average of 100 kilograms (220 pounds). At present, however, 100 kilogram hogs are considered underweight and suffer a slight penalty in prices. It is partly for this reason that feasibility of the Model is based on the low end of current and projected prices.

C.8. The Model, as a large volume seller, will be restricted in the number of purchasers who can handle its production, but its bargaining position, as a reliable volume supplier of premium hogs, will be favorable. In Mexico City particularly, large volume hog producers, while trying to avoid competition between one another, do pay very

Table 5

AVERAGE MONTHLY SALES PRICES PER KILOGRAM FOR PREMIUM
QUALITY HOGS IN MEXICO CITY AND GUADALAJARA (Pesos)

		<u>MEXICO CITY</u> ¹	<u>GUADALAJARA</u> ²
1966	September	6.73/6.43	Not Available
	October	6.64/6.34	6.40
	November	6.62/6.32	6.24
	December	6.61/6.31	Not Available
1967	January	6.55/6.25	6.22
	February	6.64/6.34	6.27
	March	6.61/6.31	6.35
	April	6.96/6.66	6.30
	May	6.68/6.38	6.27
	June	6.62/6.32	6.08
	July	6.26/5.96	6.15
	August	6.61/6.31	6.35
	September	Not Available	6.37
	October	Not Available	6.60

¹ Price F.O.B. farmsite State of Mexico; a Guadalajara-based producer would incur about 30 centavos/kg. costs to obtain these prices (Table 4).

² Price F.O.B. farmsite Guadalajara area; no reductions.

competitive prices for lean hogs. In Guadalajara, the Jalisco Association of Hog Producers has established a cooperative brokerage to provide a safety valve for its members. This brokerage should become operative in mid-1968. The Model, as a member of the Association, could, if desirable, sell through the brokerage. However it is unlikely that a producer of premium animals would need to sell in this manner.

C 9. At some time in the future, a producers market may exist for the crossbred animals grown on the farm. This could provide an excellent second stage expansion outlet for the Model and would provide support to small local producers in improving their stock.

Chapter 3 - Part IX .

IS MANAGEMENT AVAILABLE?

This question cannot be answered unequivocally since it has not been practical to seek commitments from people who are in view. There are men at work in Mexico . . . indeed, in Guadalajara itself . . . who have the technical qualifications and the working experience to head up the corn grain, dairy and swine divisions of the Model, particularly if they are helped during the early stages of operation by consultants. Without dealing bluntly with the chance, several competent specialists have indicated keen interest in the Model and the career opportunity it might offer. There is every reason to believe that good men of Mexican nationality can be found to head up the production units.

Too, it is likely that the chief executive officer of the Model can be found in Mexico. Industrial, commercial and financial activity has grown rapidly in Mexico over the past decade and a substantial, competent group of managers has emerged. These people, of both Mexican and foreign origin, are mobile; they are knowledgeable about the subtleties of doing business in Mexico; many are completely bilingual; and, in a most encouraging way, a significant number of them are expressing a keen interest in the general problems of social and economic development of the country. There is no gainsaying the fact that the purposes, organization and operation of the Model will be unique in the Mexican experience and that the chief executive of the Model will require orientation and, perhaps, counsel, from those who have conceived the project and who brought it

into existence. This consulting service is immediately available and can continue for as long as it is judged necessary.

Note that both technical and management consulting services are built into the cost of operations of the Model during the early years of its operation. These costs are specified in the financial projections included in Chapter 4, to follow. All of the consultants indicated as needed have been identified and each has made a commitment to serve the Model.

Chapter 3 - Part X

WHAT ARE FURTHER DIVERSIFICATION POSSIBILITIES?

The feasibility of the Model is predicted entirely on the basis of corn grain, milk and hog production, plus the sale of a limited number of animals from the dairy enterprise for beef and for herd improvement. This is consistent with one of the most basic rules affecting the design of the Model as a prototype of a corporate structure utilizing private investment capital in rural development, namely: let the existing market define the product or services to be created; let existing knowledge limit the choice of where among the alternatives presented in the marketplace one applies the first capital made available.

Nonetheless, it is clear that the picture of the Model painted in this feasibility report presents a view of what is possible at a minimum and that change in farming practice and in diversification will more than likely take place. During the course of the study, therefore, an eye was always kept open, looking for additional, potentially profitable ways to operate in the future. Several possibilities came into view and are noted both as guidelines to the research activities of the Model organization and as inspiration to potential investors seeking to assess the risk of putting money and time into the Model corporation. These opportunities are summarized below.

1. Extending the practice of double cropping, using garbanzo (chick-pea). By cutting and stacking the corn plants, with their ears of grain, early and allowing drying to take place, the land is made available while still containing moisture. Preparing the land between the stacks also makes the late rains more effective in adding water for new crop growth. This practice has been growing in the valley. In 1967, a good year for rainfall, it is estimated that slightly more of 20% of the land was double-cropped this way. Given the financial resources, more farmers would pursue this practice. Garbanzo is worth more per ton than corn grain. Yields in the valley rarely exceed 1 ton/hectare. However, the cost-benefit ratio of this practice is not known and little is known about increasing yields. Preliminary discussions with one private seed company, unique in Mexico in its efforts to provide improved garbanzo seed, have encouraged the belief that a profitable practice could be developed, adding income to the farmer and the Model. The market for garbanzo as a high protein animal feed ingredient is excellent. The type of garbanzo now grown is used almost exclusively in animal feed. This conceivably could be changed to the higher value varieties for human consumption.

2. Producing vegetable crops - There is a strong, growing market in Guadalajara for beans and wide variety of fresh vegetables. Production in Jalisco is wholly inadequate to meet the demand. Every day, trucks arrive in the city from every part of the country, commonly from hundreds of kilometers away. A preliminary examination of the price

structure, demand and supply, made on and off during 1967, revealed a very promising opportunity. The question for the Model is whether or not there is sufficient underground water in the valley to permit well irrigation of a commercial vegetable garden. The general response of several geologists and water engineers taken to the site was enthusiastic; specific soundings taken to determine the availability of water for the dairy and swine operations confirmed the existence of a substantial underground supply. The valley is surrounded by mountains and although the area under cultivation is small, the area drained into the valley is very large. Another evidence of the amount of water running off the mountains is the fact that on the east side of the valley, three small streams of water flow throughout the year; too, the wells serving Huejotitan and Zapotitan with potable water, set in by the Federal Government, have been in use some years without any noticeable drop in level. One of the earliest diversification studies to be entertained by the management of the Model could well be based on an underground water survey. The promise seems great. With water, a high level of year around production could be maintained on a relatively small area.

Another possibility, on a relatively small scale, is to use the water from the dairy and swine operations to irrigate as much as two hectares for a semi-commercial vegetable garden. This water will be rich in manure and an excellent fertilizer source of a consequence.

An incentive to an early test of this type of garden is the interest expressed by a fruit and vegetable freezing plant nearby, in taking the entire output provided certain crops were produced and in providing technical assistance in working through the novelty of vegetable growing in the valley.

The valley site of the Model lies within several kilometers (1 km. = 0.62 miles) of Lake Chapala, the largest lake in Mexico. The rise from the surface of the lake to southerly end of the valley is roughly 150 - 200 feet. The valley has a natural tilt northerly which would permit gravity flow from one end to another if water from the lake were pumped into a main canal. There is a real and immensely exciting possibility that the entire valley could be irrigated in the future, at a relatively low cost. The implications of this possibility go far beyond vegetable production. However, no attempt was made to even approximate the cost-benefit relationships involved or to sound out the Ministry of Water Resources as to approvals. Talk of a project of this magnitude so long before a Model Corporation existed seemed premature. When the Model starts and proves successful, however, a study of the use of Lake Chapala, in cooperation with the Government of Mexico, should be given the highest priority.

3. Milling corn cobs and plants after harvest There will be in the valley thousands of tons of cobs and vegetable matter from the corn plants for utilization. Some of this material is now consumed locally as cattle feed, but even before a new high level of production is achieved, there is a great excess. Once the Model reaches full production, this surplus will be far greater. Dried plants and cobs, ground together into a coarse flour, have a ready market as an animal feed additive. The price is low, about 20 centavos (U. S. 1.6 cents)

a kilogram; on the other hand, raw material and processing costs would be very low. While the income potential of such a milling operation is small, it should be explored by the Model in its search for maximum efficiency.

4. Dry milling corn grain Several patented processes exist covering the production of a corn grain flour suitable for making "masa", the base of tortillas. There is little current interest in the Guadalajara market in such flour but this may change. In the north of Mexico, as, for example, in Monterrey, where locally grown corn is in minimum supply, dry milled masa flour does have a market. No market research has been done to substantiate this opportunity, but it is a likely prospect for a vertical integration project in the future. The technology of the process is available. One known feasibility study does exist, prepared by the Monterrey Institute of Technology, which predicts a reasonably good return on equity (16 to 20%, on 4.22 million pesos - U. S. \$338,000), at plant capacity of 10,800 tons/year.

5. Adding a second dairy - extending operations to pasteurize, package and distribute milk. From the market study made of milk (Chapter 3, Part VIII), it is clear that within five years, it might be constructive as well as profitable to extend the Dairy Division of the Model both to add productive capacity and to add more profit to the raw milk produced. Initially, it is felt that for the Model to enter into pasteurizing and distribution would be destructive to the

investments already made in this industry in Guadalajara. As noted, none of these facilities is operating at full capacity. This situation should change and create a significant opportunity for the Model. It is, of course, quite possible that long before it is feasible or desirable to go as far as pasteurizing and marketing it will prove advantageous to add a second dairy or to enlarge the first.

6. Production of beef . The Dairy Division will market some animals for beef production. This activity, while profitable, will be more symbolic of the potential market for top quality meat than it will be a major beef operation. There are two ready ways to expand the beef operations of the Model:

a. Feed lot for range stock Both the Guadalajara and Mexico City markets are serviced by the only commercial feed lot operation in Guadalajara. In this instance, range animals are bought very cheaply from as far away as 250 miles. Animals of all ages and quality are bought, fed out for no more than three months and slaughtered for use in processed meat products. The feed lot owners also offer fattening services to local buyers who select out the better animals, add weight during a 30 to 45 day period and then arrange to pass the animals through the certified Guadalajara abattoir. This meat finds its way into butcher shops throughout the city, including those of the supermarkets which are patronized by the wealthier classes. There is little question that the Model could develop a second feed lot of a similar nature. The market is growing for all classes of beef. There are plenty of range animals to be bought.

b. Feed lot for Holstein bull calves As noted, the Model will take advantage of this opportunity in a small way, utilizing the bull calves from its own dairy herd. However, a superficial survey was made within a radius of 100 miles of Guadalajara to determine the reservoir of Holstein bull-calves. It was found that there are no less than 40,000 to 50,000 on the market annually (or disposed of within two to three days of birth) and the supply is reasonably constant all year around. A portion of these enter the veal market; a great many find no commercial outlet. At present, there is no commercial operation in Mexico devoted to starting with very young Holstein calves and feeding them out to beef size (800 to 1,000 pounds on the hoof). Based on current knowledge of both market and the quality of these animals as beef producers, a real opportunity exists to pioneer in this type of enterprise. With the help of experts from the University of Arizona, it has been estimated that for an investment of roughly \$350,000, an operation feeding out 6,000 calves a year could be brought into existence, with a before tax profit potential of close to 70% on equity (equity at 60% of total investment required), based on 1968 prices and costs. However, in consideration of a total lack of experience in Mexico, feeding out on this scale is considered a project for the future rather than one to be integrated into the Model at the outset; there is still much to be learned about handling thousands of calves coming from a large number of small herds of varying quality and varying health conditions.

Chapter 4

FINANCIAL PROJECTIONS

Exhibits I through VII, in the following pages, summarize the economics of the Model and forecast the results expected.

It should be re-emphasized at this point that these exhibits are meant to illustrate that the Model is feasible and can generate the cash flow needed to accomplish its objectives. Management and the Board of Directors of the Model may define other and better ways of handling the resources of the corporation to the same ends. It is precisely the skills of corporate management and of corporate financing that are now called for to give the Model its greatest impact and most creative force as a prototype.

EXHIBIT Y

ESTIMATED INVESTMENT AND OPERATING RESULTS - CORN GRAIN DIVISION

(dollars rounded to nearest thousand)

Year	1	2	3	4
<u>BUILDINGS</u>				
Storage shed	28			
<u>EQUIPMENT</u>				
Tractors ^b	16	16		
Pickup trucks	13	3		
Sprays	6			
Testing facilities ^c	2			
Contingencies	<u>5</u>	<u>4</u>	<u>2</u>	
<u>TOTAL PLANT AND EQUIPMENT</u>	70	23	2	
<u>ANNUAL OPERATING EXPENSES</u>				
Purchase of corn grain ^d	512	1,120	1,362	1,362
Salaries and wages ^e	22	27	27	27
Energy, maintenance and supplies	16	20	20	20
Contingencies	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>
<u>TOTAL ANNUAL OPERATING EXPENSES</u>	553	1,170	1,412	1,412
<u>TOTAL CAPITAL REQUIRED</u>	<u>623</u>	<u>1,197</u>	<u>1,418</u>	<u>1,416</u>
<u>ESTIMATED OPERATING RESULTS</u>				
Sales ^a	576	1,260	1,532	1,532
Less operating expenses	<u>553</u>	<u>1,170</u>	<u>1,412</u>	<u>1,412</u>
Net operating earnings before taxes	<u>23</u>	<u>90</u>	<u>120</u>	<u>120</u>

NOTE: DATA CONSTANT FROM YEAR 4

EXHIBIT I - NOTES

a. Sales are based on the following:

- Year 1 -
- 1,600 hectares under management (4,000 acres)
 - Yield is 5 tons per hectare (roughly 80 bushels per acre)
 - 400 farmers are involved; 66% of all farmers
 - Each family keeps 2 tons for household use
 - 8,000 tons sold by farmers to the Model; 7,200 from the managed area; 800 from the remaining area farmed by the cooperating campesinos but not under management
 - Selling price by Model is U. S. \$72/ton
- Year 2 -
- 3,700 hectares under management (9,250 acres)
 - 500 farmers are involved; 80% of all farmers
 - 17,500 tons sold to the Model
- Year 3 - and after
- 4,480 hectares under management (11,200 acres)
 - 560 farmers are involved; 90% of all farmers
 - 21,280 tons sold to the Model

Yield of 5 tons per hectare is based on actual results of test plantings made in 1967 and 1968. In 1967, 2 plots of 1 hectare each were planted in different locations. Harvest results of 4.8 and 5.0 tons per hectare were obtained. In 1968, 18 plots of 1 hectare each were planted. The average of all plots was a harvest of 4.7 tons per hectare. However, the following is to be noted:

i. Certain of the test plots in 1968 were deliberately located at or outside of the boundaries of the 4,480 hectares included in the Model scheme. This was done to validate the decision to confine the project within the area selected. As expected, the harvest results on these plots were the lowest obtained, dropping as low as 2.7 tons per hectare. Therefore, if, out of the 16 hectares under test, only the top ten are averaged, the net result is a rise in production to 5.7 tons per hectare; the top 7 hectares averaged 6.1 tons; the top 5 hectares averaged 6.4 tons, and in 2 locations yield exceeded 7.0 tons. (The average yield in the valley under traditional practice, as nearly as it can be estimated, is between 1.5 and 1.7 tons per hectare, with the majority of farmers obtaining 1.0 ton or less.)

ii. It was observed during 1967 and 1968, on the test plots and generally throughout the valley that the topography of the land to be embraced by the Model is characterized by endless undulations. These variations in level seriously affect drainage during the rainy season and, in turn, where there are low spots and a tendency to puddle, the yield of corn drops sharply, all other factors being equal. As a test of the impact of poor drainage, in each of the test plots of 1968, the harvest was broken into 2 samples: one, representing the higher, better drained land; two, representing the low, wet areas. The average difference in yield between the two was roughly 1 ton per hectare, in favor of the high spots. Therefore, in 1969, when 48 hectares will be placed under management, all this land is being levelled to eliminate poor drainage,

improved drainage ditches are being constructed and planting will be done in accordance with a contour map to minimize wash out and maximize the effect of fertilizer and other agricultural chemicals.

iii. During the 1968 season, the attempt was made to control plant density to 40,000 plants per hectare. At the same time, there was interest to learn something about the intensity of supervision necessary to ensure that the instructions of the agronomist were being carried out. For this reason, supervision at the moment of planting was to some degree casual. The result was instructive. Plant populations at maturity varied by more than 100%, from a low of 24,000 to a high of 52,000. Yields were not related in a straight line curve to plant density, since other variables such as soil quality, drainage, time of planting, among others, were interacting; still, a distinct trend toward higher yield with higher plant population was observable. For this reason, in 1969, very tight supervision will be exercised at planting time.

iv. Hybrid corn seed is produced and sold commercially in Mexico exclusively by a federal government agency, the Productora Nacional de Semillas. The quality of seed leaves something to be desired. However, between 1967 and 1968, there was a sharp improvement in seed uniformity and a particular hybrid recommended for the valley site of the Model, according to the Manager of the Guadalajara branch of the National Seed Company, should be of the best quality yet in 1969. In all, yields in excess of 6.0 tons per hectare are anticipated from the test area in 1969.

b. The calculation of tractor requirements is highly empirical at this time. With the use of available animals and tractors, 3,300 hectares of corn were cultivated during the 1967 season. All of the tractors could be used more to their economic advantage. So, too, could the animals, particularly as chemical herbicides replace the need to cultivate. With this in mind, it is estimated that 5,000 hectares could be farmed with the animal and tractor power now on hand. However, as a measure of security and to perform the many tasks common to a farming operation of the size contemplated, two tractors are included in the investment in Year 1 and two more in Year 2. It is assumed from prior experience in this part of Mexico that as income rises sharply in the valley, groups of farmers will form to buy new tractors.

c. Testing facilities are simple and include only the instruments necessary for moisture determinations of grain samples taken to control sales at 14% of dry weight. Soil analyses can be obtained at very low cost from government laboratories in Guadalajara.

d. The purchase price of corn is taken as \$64 ton, based upon prices known to be obtained by the farmers as a result of the anthropological studies referred to in Chapter 3, Part III. As noted, a test of the acceptability of this price has been made. In 1969, the farmers cooperating in the test plantings have all readily agreed to such a price. Indeed, in explaining the program for 1969, the farmers were advised that the only guarantee vis-a-vis the price they would be paid was that they would

receive exactly \$8 less per ton than the corn was sold for in Guadalajara and that this \$8 covered the cost of all the services to be brought to them. Thus, the price received by the farmers at harvest time might be somewhat higher or lower than \$64. The farmers had no trouble realizing that prices in the open marketplace might vary for reasons wholly beyond local control and, in any event, they would be better off with high yields and low interest credit than they would be on their own if prices were to decline.

e. Salaries and wages include 20% added over base pay for social security benefits. This figure is representative of the businesses and industries in the Guadalajara area, according to a study made by the Instituto Jalisciense de Promoción y Estudios Economicos, A.C. Included are:

Year 1 - Head Agronomist	\$ 6,560 base pay
Assistant Agronomist	4,000 base pay
2 Technical Assistants	4,000 base pay
3 Laborers @ \$560	1,680 base pay
1 Secretary-Bookkeeper	<u>1,600</u> base pay
Total Year 1	\$17,840
plus 20%	\$21,408, round to \$22,000

Year 2 and thereafter -

Add 2 additional Technical assistants	4,000 base pay
Total Year 2	\$21,840
plus 20%	\$26,208, round to \$27,000

EXHIBIT II

ESTIMATED INVESTMENT AND OPERATING RESULTS - DAIRY DIVISION

(dollars rounded to nearest thousand)

YEAR	1	2	3	4	5
<u>BUILDINGS</u>					
Silage storage ^a		18			
Concentrate storage ^b		50			
Milk parlor and office		20			
Corrals and sheds		100			
Houses ^c		9			
<u>EQUIPMENT</u>					
Tractor		7			
Pickup truck		3			
Feed preparation		10			
Feed distribution ^d		8			
Milking		27			
Waste disposal		3			
50 Kv generator ^e		8			
<u>SITE PREPARATION</u>					
		10			
<u>LIVESTOCK</u> ^f					
	40	320	40		
<u>TOTAL PLANT AND EQUIPMENT</u> ^g					
	313	320	40		
<u>ANNUAL OPERATING EXPENSES</u>					
Silage ^h	58	88	98	112	
Concentrates	1	96	188	223	
Breeding costs	-	8	12	12	
Veterinarian costs	-	10	10	10	
Energy, maintenance, insurance and supplies	1	12	12	12	
Salaries and wages ⁱ	1	26	26	26	
Training costs ^j	4	-	-	-	
Consultants ^k	5	3	3	-	
Pre-operating costs ^l	4	-	-	-	
Contingencies	8	8	8	8	
<u>TOTAL ANNUAL OPERATING EXPENSE</u>					
	82	251	357	403	
<u>TOTAL CAPITAL REQUIRED</u>					
	395	571	397	403	
<u>ESTIMATED OPERATING RESULTS</u>					
<u>SALES:</u>					
Milk ^m		359	473	473	
Cull cows for beef		20	20	20	
Fattened bull calves		-	80	80	
Surplus milk cows		-	-	50	
<u>TOTAL SALES</u>					
		379	573	623	
<u>Less operating expenses</u>					
	82	253	357	403	
<u>Net operating earnings before taxes</u>					
	(82)	126	216	220	

NOTE: DATA CONSTANT FROM YEAR 5

EXHIBIT II - NOTES

- a. These will be trench silos with storage capacity of 16,000 tons total.
- b. This building, which will contain concentrate storage and feed milling equipment, has a planned capacity of 3,725 tons.
- c. Two homes are planned on the dairy site. One is for the head herdsman; the other for his assistant. This local supervision is vital since operations will be on a 24 hour basis. As well, proper emergency care of the animals requires this on-site administration at all times.
- d. Feed distribution will be made to the corrals by a specially designed truck now commercially available.
- e. Electricity will be purchased. Power is available at the site by a simple take-off from lines supplying the communities in the valley. However, the standby generator provides vitally important assurance that a power failure will not cause any loss to the dairy operations. This is critically important in a rural area.
- f. Under Mexican regulations, importers of milk cows are generally required to utilize registered animals. Import licenses for registered stock are made available by the Secretary of Agriculture and Livestock.

It is widely recognized, however, that carefully selected nonregistered or "grade" animals can produce both milk and offspring of equal quantity and quality to the production of registered stock. Such animals can be bought in the United States and delivered in the Guadalajara area for as much as U. S. \$200 less than registered cows.

Recently, precedent and procedure have been established which permit the importation of inspected and approved nonregistered Holsteins when the project is deemed to be of national importance and one which would be benefited by the exception. In such a case, the financing of the importation proceeds through a Mexican private bank which, in turn, obtains the approval of the Banco de Mexico, Fondo de Garantia y Fomento para la Agricultura, Ganderia y Avicultura. This approval brings with it an investigation by the technical staff of the Fondo de Garantia of the herd of nonregistered animals it is proposed to import. If this herd is approved in terms of quality and the desirability of allowing its entry, the Fondo so advises the Ministry of Agriculture and Livestock, which must give the final approval.

By this means, several large herds of grade animals have been brought into Mexico within the past several years; of particular interest is a herd in excess of 600 animals which was dispersed among small groups of ejidatarios. Very preliminary discussions at the Bank of Mexico and with officials of the Fondo de Garantia about the Model and its beneficial impact on the ejidatarios of the valley, indicated strong interest and a

definitely sympathetic attitude toward importation by the Model of non-registered stock. Therefore, the investment requirements of the Dairy Division are based on grade animals.

g. No contingency fund is shown. The costs of buildings and site preparation, while based on discussions with local engineers, are deliberately kept in line with United States costs, since these were known with considerable accuracy of prediction. Final engineering plans are being prepared and local contractors will be asked to price out construction at the site. It is assumed that the costs shown, therefore, are on the high side. In this sense, a contingency construction fund is built-in to these costs.

h. The silage and concentrate demand for Year 2 assumes arrival of the first animals (100) on December 1. Thus, only one month of feeding costs are involved. However, all of the silage necessary for the period between harvests (12 months, from September to September) will have been purchased prior to the arrival of these animals. For this reason, silage costs appear wholly disproportionate to the concentrate costs shown for Year 2 (the first year of expenditures for the dairy operation). It is intended to produce all silage consumed. The price of silage to the farmer is intended to assure him of the same income per hectare as he would get from a yield of 5 tons of grain. This is necessary as an incentive to produce what is essentially a new crop. From tests of silage production made in 1967 and again in 1968, price is based on a

yield of 40 tons per hectare of whole plant corn ready for the silos. This is \$8/ton delivered to the silo. It is anticipated that this price will drop as yields of the crop per hectare for silage increase. For example, over 50 tons were harvested on one plot in 1968. However, these results need further verification.

i. Salaries and wages include a 20% markup over base pay for social security benefits. The staff includes:

Head, Dairy Division	\$ 8,000 base pay
1 Secretary-Bookkeeper	1,600 base pay
Herdsmen and five milkers	6,000 base pay
Assistant herdsman	2,500 base pay
Feed truck and tractor operator . .	1,460 base pay
4 Laborers @ \$560 each	<u>2,240</u> base pay
Total from Year 2 . .	\$21,800
plus 20%	\$26,160 round to \$26,000

j. The Head of the Dairy Division will be employed no later than September 1 of Year 2. This will permit him to supervise the preparation of silage that month, from the current harvest. When this task is completed, it is planned that in October and November he will be in the United States, under the tutelage of the consultant, Dr. Gerald Stott, Head, Department of Dairy Science, College of Agriculture, University of Arizona, Tucson, Arizona, U. S. A. Dr. Stott will be selecting the animals at that time and this process will be a part of the training program designed for the Head of the Dairy Division.

k. It is planned for Dr. Stott to consult at the dairy in Mexico as necessary during the first three years of operation, while production is building to full capacity.

l. The pre-operating cost noted covers primarily the labor necessary to support the Head of the Dairy Division in the preparation of silage in September

m. Sales are based on (see Chapter 3, Part VIII, for more details):

- a price received of 1.35 pesos per liter (10.80 cents); selling 12,000 liters of cooled milk per day at full production;

- selling 100 cull cows and 400 fattened bull calves per year at 5.50 pesos per kilogram on the hoof (20.00 cents per pound); and,

- selling 100 surplus milk cows per year at an average price of \$500.

EXHIBIT III

ESTIMATED INVESTMENT AND OPERATING RESULTS - SWINE DIVISION

(dollars rounded to nearest thousand).

	YEAR	1	2	3	4	5	6
<u>BUILDINGS</u>							
Sow pens		4	4	4			
Boar pens		1	1	1			
Farrowing houses		13	13	13			
Nurseries		8	8	8			
Finishing houses		18	18	18			
Storage and feed mixing ^b		7	-	-			
House ^c		<u>6</u>	<u>-</u>	<u>-</u>			
<u>EQUIPMENT</u>							
Tractors		6	6				
Pickup truck		3	-				
Feed mixing		4	1				
25 Kv. generator ^d		5	-				
Contingencies		<u>5</u>	<u>-</u>	<u>-</u>			
<u>LIVESTOCK</u>							
Sows		<u>37</u>	<u>-</u>	<u>-</u>			
<u>TOTAL PLANT AND EQUIPMENT</u>							
		117	51	44			
<u>ANNUAL OPERATING EXPENSES</u>							
Feed		84	238	383	443	443	
Boars ^e		4	4	4	2	2	
Veterinarian		2	4	7	7	7	
Salaries and wages ^f		10	14	19	21	21	
Energy, maintenance, insurance, supplies		4	5	5	5	5	
Consultants ^g		11	14	11	8	-	
Contingencies		<u>2</u>	<u>2</u>	<u>3</u>	<u>2</u>	<u>3</u>	
<u>TOTAL ANNUAL OPERATING EXPENSE</u>							
		117	281	432	488	481	
<u>TOTAL CAPITAL REQUIRED</u>							
		<u>234</u>	<u>332</u>	<u>476</u>	<u>488</u>	<u>481</u>	
<u>ESTIMATED OPERATING RESULTS</u>							
Sales ^a		66	263	502	598	598	
Less operating expenses		<u>117</u>	<u>281</u>	<u>432</u>	<u>488</u>	<u>481</u>	
Net operating earnings before taxes		<u>(51)</u>	<u>(18)</u>	<u>70</u>	<u>110</u>	<u>117</u>	

NOTE: DATA CONSTANT FROM YEAR 6

EXHIBIT III - NOTES

(The following notes are for the purpose of providing information only and should not be construed as a representation or warranty of any kind.)

a. Sales revenues are based on the movement of 900 animals

per month, at an average weight of 110 kilograms (242 pounds), in accordance with the following build-up to maximum production:

Sale Price - 6.3 pesos per kilogram (U. S. \$22.91 cwt)

<u>Month From Startup</u>	<u>Animals Sold</u>	<u>Sales Revenue (pesos)</u>
8 *	240	166,320 (U.S. \$13,305)
9	240	" "
10	240	" "
11	240	" "
12	240	" "
13	240	" "
14	320	20 cull gilts or sows . 221,860 (U.S. \$17,742)
15	300	207,900 (U.S. \$16,632)
16	300	" "
17	300	" "
18	300	" "
19	300	" "
20	540	save 60 replacement gilts 374,225 (U.S. \$29,938)
21	540	" " " " " "
22	540	" " " " " "
23	540	" " " " " "
24	540	" " " " " "
25	660	60 cull gilts or sows . 457,375 (U.S. \$36,590)
26	600	415,800 (U.S. \$33,264)
27	600	" "
28	600	" "
29	600	" "
30	600	" "
31	900	623,700 (U.S. \$49,896)

* Approximately 7 months will be required to feed out a litter of piglets to market weight.

b. This building will have a capacity of 400 tons. It will house bulk feed purchased in large quantity during periods of minimum price. Feed mixing facilities will be housed here.

c. This house is for the operating manager whose supervision must be available 24 hours a day.

d. Power will be bought commercially but in the rural setting of the Model it is necessary insurance to have a standby generator. In the final plan of construction, the standby generators of the Swine and Dairy Divisions may be integrated with some reduction in investment and operating cost.

e. Some replacement of purebred breeding boars will be necessary each year to ensure the efficient development of the crossbred stock recommended by Dr. Hudman as ideal for the climate, feed and market conditions in which the Model will function.

f. Salaries and wages include 20% over base pay for social security benefits. The staff will be comprised of:

Year 2 - Head Herdsman	\$ 3,600 base pay
6 Laborers @ \$560 each	3,360 base pay
1 Secretary-Bookkeeper	<u>1,600</u> base pay
Total - Year 2	\$ 8,560
plus 20%	\$10,272, round to \$10,000

Year 3 - Head Herdsman - salary increase to \$ 4,200 base pay
 Laborers increase to 10 5,600 base pay
 Secretary-Bookkeeper 1,600 base pay
 Total - Year 3 \$11,400
 plus 20% \$13,680, round to \$14,000

Year 4 - Head Herdsman - salary increase,
 Mexican Herdsman assumes charge,
 U. S. consultant manager leaves. . \$ 5,100 base pay
 Laborers increase to 16 8,760 base pay
 Secretary-Bookkeeper 1,600 base pay
 Total - Year 4 \$15,660
 plus 20% \$18,792, round to \$19,000

Year 5 - Head Herdsman - salary increase to \$ 6,600 base pay
 and after
 Laborers remain at 16 8,960 base pay
 Secretary-Bookkeeper 1,600 base pay
 Steady Total \$17,160
 plus 20% \$20,680, round to \$21,000

g. Two types of consultants will be used. An experienced swine production/operations manager from the United States will be employed for the first 30 months and will train the Mexican manager to deal with an enterprise as large as the one planned. At the same time, Dr. Donald Hudman, Extension Swine Specialist, Texas A & M University, who worked in Jalisco in the feasibility analysis of the Swine Division of the Model, will serve as a consultant until full capacity has been attained.

EXHIBIT IV

ESTIMATED INVESTMENT AND OPERATING RESULTS CONSOLIDATED

(dollars rounded to nearest thousand)

YEAR	1	2	3	4	5	6
BUILDINGS ^a	31	262	44	44	-	-
EQUIPMENT ^b	46	132	9	-	-	-
SITE PREPARATION	-	10	-	-	-	-
LIVESTOCK	-	77	320	40	-	-
<u>TOTAL PLANT AND EQUIPMENT</u>	77	481	373	84	0	0
ANNUAL OPERATING EXPENSES ^c	630	1,448	1,992	2,236	2,326	2,319
<u>TOTAL CAPITAL REQUIRED</u>	<u>707</u>	<u>1,929</u>	<u>2,365</u>	<u>2,320</u>	<u>2,326</u>	<u>2,319</u>
<u>ESTIMATED OPERATING RESULTS</u>						
<u>SALES:</u> Grain Division	576	1,260	1,532	1,532	1,532	1,532
Dairy Division	-	-	379	573	623	623
Swine Division	-	66	263	502	598	598
<u>TOTAL SALES</u>	576	1,326	2,174	2,607	2,753	2,753
Less operating expenses	630	1,448	1,992	2,236	2,326	2,319
Net operating earnings before taxes	<u>(54)</u>	<u>(122)</u>	<u>182</u>	<u>371</u>	<u>427</u>	<u>434</u>

NOTE: DATA CONSTANT FROM YEAR 6

EXHIBIT IV - NOTES

a. Buildings - In Year 1, a house for a resident watchman is built at a cost of \$3,000. In Year 2, an office building is constructed at a cost of \$8,000. This latter building provides an office for the General Manager and three bedrooms to serve the agronomic staff if the need is felt at times of intensive supervision to remain at the site and, as well, to provide room for guests. Once the Model gets underway and past the first year of entry, it is expected that people from throughout the world will visit the site as a prelude to their interest in adapting the Model elsewhere. The construction of this building is deferred to the second year merely to be prudent in the use of capital while the test is made of the successful entry of the Model into the valley.

b. Equipment - In Year 1, an automobile is provided the General Manager at a cost of \$4,000. In Year 2, the investment is made in digging a well and providing water to the sites of the dairy and swine operations.

c. Operating Expenses - In addition to the operating expenses shown in Exhibits I, II and III, the following costs are added each year:

Year 1 and thereafter - \$15,000/year for General Manager

Year 1 - \$ 2,000 - accounting services

\$10,000 - legal services

\$50,000 - management services

• Year 2 - \$ 4,000 - accounting services
\$10,000 - legal services
\$50,000 - management services

• Year 3 - \$ 4,000 - accounting services
\$ 4,000 - legal services
\$25,000 - management services

• Year 4 - \$ 4,000 - accounting services
\$ 4,000 - legal services
\$12,000 - management services

• Year 5 and thereafter -
\$ 4,000 - accounting services
\$ 4,000 - legal services

ESTIMATED
(dollars)

YEAR	1	2	3	4	5	6	7
<u>REVENUE FROM SALES</u>	<u>576</u>	<u>1,326</u>	<u>2,174</u>	<u>2,607</u>	<u>2,753</u>	<u>2,753</u>	<u>2,753</u>
<u>EXPENSES</u>							
Operating Expenses	630	1,448	1,992	2,236	2,326	2,319	2,319
Less Net Inventory Increase ^a	-	21	62	60	24	-	-
Net Operating Expenses	<u>630</u>	<u>1,427</u>	<u>1,930</u>	<u>2,176</u>	<u>2,302</u>	<u>2,319</u>	<u>2,319</u>
Depreciation ^b	11	42	46	48	48	48	48
Interest-Long Term Loan ^c	5	34	45	45	42	40	37
Interest-Medium Term Loan ^d	<u>6</u>	<u>12</u>	<u>12</u>	<u>12</u>	<u>10</u>	<u>7</u>	<u>4</u>
Total	<u>652</u>	<u>1,515</u>	<u>2,033</u>	<u>2,281</u>	<u>2,402</u>	<u>2,414</u>	<u>2,408</u>
<u>OPERATING INCOME BEFORE TAXES</u>	<u>(76)</u>	<u>(189)</u>	<u>141</u>	<u>326</u>	<u>351</u>	<u>339</u>	<u>345</u>
Less: Taxes, 42%, Less 40% ^e	-	-	-	51	88	85	87
Less: Other Federal, Local Taxes ^f	-	-	3	5	6	6	6
<u>NET OPERATING INCOME</u>	<u>(76)</u>	<u>(189)</u>	<u>138</u>	<u>270</u>	<u>257</u>	<u>248</u>	<u>252</u>
Less: 10% Employee Profit Sharing ^g	-	-	-	27	25	24	25
Less: 5% For Legal Reserve ^h	-	-	-	13	13	12	13
<u>NET INCOME</u>	<u>(76)</u>	<u>(189)</u>	<u>138</u>	<u>230</u>	<u>219</u>	<u>212</u>	<u>214</u>
As % of Equity	-	-	30%	50%	48%	46%	47%
<u>PROPOSED DISTRIBUTION</u>							
Payment to Farmer Trust Fund ⁱ	-	-	-	-	29	39	40
Tax on Trust Fund Payment-20% ⁱ	-	-	-	-	6	8	8
Cash Dividend to Farmers ^j	-	-	-	10	12	14	16
Retained Earnings	-	-	138	151	57	36	35
Dividend Available to Investors	<u>-</u>	<u>-</u>	<u>-</u>	<u>69</u>	<u>115</u>	<u>115</u>	<u>115</u>
Total	<u>-</u>	<u>-</u>	<u>138</u>	<u>230</u>	<u>219</u>	<u>212</u>	<u>214</u>
<u>INVESTOR DIVIDEND AS % OF EQUITY</u>	-	-	-	15%	25%	25%	25%

EXHIBIT V - NOTES

a. Inventory refers to animal feed concentrates and supplements for the Dairy and Swine Divisions. Inventory will be built up and maintained at a level of three months supply. In point of fact, there may be times when the inventory of a particular feedstuff will be more than a three month supply if it becomes financially desirable to buy for longer periods when the cost is at a normal low point in the production-distribution cycle. This could well be the case for such ingredients as sorghum, cottonseed meal, molasses, among others.

b. Depreciation is calculated on a straight line basis, in accordance with Mexican regulations, on the following schedule: mobile equipment, 5 years; stationary equipment, 10 years; buildings, 20 years. In time and amount, calculations are made with these values in mind:

	<u>Value in Thousands of Dollars *</u>		
	<u>Mobile Equipment</u>	<u>Static Equipment</u>	<u>Buildings</u>
Year 1	44	2	31
Year 2	55	77	262
Year 3	8	1	44
Year 4	0	0	44

* Assumes that all contingency funds shown in Exhibits I and III will be used for so-called "Mobile Equipment" such as tractors, vehicles, sprays, in contrast to such static items as feed mixers, milking machines, among others which remain in one place, even though with moving parts.

c. Interest is taken at 9% per year (see Chapter 3, Part VI).

d. Interest is taken at 12% per year. It may be possible for the private bank extending this credit to refinance the loan at the Bank of Mexico, in which case, interest as low as 7% and no higher than 10% may be obtained (see Chapter 3, Part VI). This loan is intended to be guaranteed by the investors in the Model.

e. As referred to in Chapter 3, Part V, this tax is applicable to the Model which, at full production, will derive its income from services to farmers (as distinct from farming directly) and the operation of agribusinesses, the dairy and swine operations.

f. These taxes are itemized in Chapter 3, Part V. As noted there, it is assumed that state taxes will be waived.

g. The use of 10% profit sharing is based upon a ratio of paid-in capital to anticipated payroll (exclusive of the salary of the chief executive officer) of roughly 6:1. By formula, profit sharing calculations indicate 9.8% of profit after taxes should be distributed. This has been rounded to 10%. By law, no profit is shared until the third year of operation, or the first year thereafter which yields a taxable operating revenue.

h. The law requires that 5% of the profit available for distribution be held in reserve until the reserve fund equals 20% of the paid-in capital. This fund is corporate property and can be invested. It simply cannot be paid out to investors. The reserve fund represents assurance to creditors of some payment on debts should there be default.

i. The Trust is the instrument used to effect the orderly transfer of ownership to the farmers, as described in detail in Chapter 3, Part IV. Based on legal opinion, it is assumed that the normal dividend tax of 20% must be paid to the Federal Government and the tax is noted as paid for by the Model as an integral cost of the transfer. Once the Model is a legal entity, an application will be made to exempt payments to the Trust from this tax. If the Ministry of Treasury and Public Credit so approves, this money could either be applied to speed up the roll out of their equity by the investors or to increase the cash dividend to farmers or in some other beneficial way. In the plan shown in Exhibit V, assuming 10% annual interest earned on the investments made by the Trust and assuming that interest earnings will be reinvested along with new capital inflow to the Trust, the fund builds up as follows:

<u>End of Year</u>	<u>\$ rounded to nearest 000</u>
5	\$ 29,000
6	71,000
7	118,000
8	173,000
9	216,000
10	278,000
11	347,000
12	424,000
13	476,000
14	534,000
15	597,000
16	667,000
17	743,000
18	828,000
19	921,000
20	1,023,000

As an indication of the yield potential in institutions regulated by the National Banking Commission and whose deposits are guaranteed by the Federal Government in amounts without limit, the following survey is illustrative (Allen W. Lloyd and Associates is the largest stock brokerage firm in Mexico):

A SURVEY OF:
TYPICAL MEXICAN INVESTMENTS
BY ALLEN W. LLOYD Y ASOCIADOS, S. A.

Apartado Postal No. 1470
Guadalajara, Jalisco, Mexico

February 28, 1969

	<u>DURATION OF INVESTMENT</u>	<u>YIELD TAX-FREE OR AFTER TAXES</u>	<u>MINIMUM PESO INVESTMENT</u>
<u>COMMON STOCKS</u>			
MUTUAL FUNDS			
FIMSA - (dividends paid quarterly) \$ 11.79	Liquid	8.50%	\$ 10,000.00
FIRME - (dividends paid quarterly) 139.25	Liquid	7.20%	10,000.00
<u>BONDS</u>			
INDUSTRIAL DEVELOPMENT BANKS - (interest paid quarterly)	Liquid	8.73%	10,000.00
REAL ESTATE MORTGAGE BANKS - (interest paid monthly)	Liquid	8.00%	10,000.00
<u>TIME DEPOSIT CONTRACTS</u>			
INDUSTRIAL DEVELOPMENT BANKS -			
(interest paid monthly)	1 year	10.00%	25,000.00
	2 years	10.50%	25,000.00
	3 years	10.75%	25,000.00
	4 years	11.00%	25,000.00
	5 years	11.25%	25,000.00
	2 years	11.00%	250,000.00
(interest paid at maturity)	1 year	10.50%	25,000.00
	2 years	11.00%	25,000.00
(interest paid at maturity)	1 year	11.00%	250,000.00
	2 years	12.00%	250,000.00

The fact that the Trust Fund could be built up in accordance with these figures is shown merely to indicate the most obvious way in which equity and increased corporate value could be recovered by the original investors in the Model and, at the same time, provide the farmer-owners a substantial capital fund when transfer takes place. There are an infinite variety of ways in which the flow of capital to and from the Trust, for the maximum benefit of all parties, can be adjusted, depending upon circumstances from year to year. No attempt is made in this feasibility report to do more than affirm what is possible.

Investment of Trust funds in the nonagricultural sector of the Mexican economy, in addition to the earnings generated, is intended to bring about three additional benefits which are both basic and generic to the design of ventures like the Model which are aimed at the use of capitalistic, free enterprise systems to promote rural development:

- educating the farmers to the nature and value of long term savings and investment;
- encouraging the farmers to continue such use of their savings when they own and operate the Model, thus simultaneously extending their earnings and spreading their investment risk throughout the national economy; and,
- accelerating the economic integration of agricultural and industrial activity in the nation, for mutual support of growth.

j. These cash dividends are assumed to be free of tax since they seem so obviously in line with the crying needs of the farmers for money and the entire thrust of Government to raise the standards of living in the countryside as sharply and quickly and directly as possible.

If a tax is demanded, it would be taken out of this dividend rather than be added to it at Model cost. If the schedule shown is adhered to and if 550 farmers are in the scheme as dividends are paid out, the result for the farmers would be (current average annual income from all sources - \$384):

<u>Year</u>	<u>Increase in Annual Income</u>	<u>Year</u>	<u>Increase in Annual Income</u>
4	\$18 - plus 5%	13	\$109 - plus 28%
5	22 - plus 6%	14	127 - plus 33%
6	25 - plus 7%	15	145 - plus 38%
7	29 - plus 8%	16	164 - plus 43%
8	33 - plus 9%	17	173 - plus 45%
9	36 - plus 9%	18	182 - plus 47%
10	55 - plus 14%	19	191 - plus 50%
11	73 - plus 19%	20	200 - plus 52%
12	91 - plus 24%		

EXHIBIT VI

ESTIMATED CASH FLOW CONSOLIDATED OPERATIONS
(dollars rounded to nearest thousand)

YEAR	1	2	3	4	5	6	7	8
CASH IN								
Cash Forward	-	58	144	18	45	78	70	50
Net Operating Income	(76)	(189)	138	270	257	248	252	255
Equity Paid-In	100	360	-	-	-	-	-	-
Long Term Loans	50	325	125	-	-	-	-	-
Medium Term Loans	50	50	-	-	-	-	-	-
Depreciation Accruals	<u>11</u>	<u>42</u>	<u>46</u>	<u>48</u>	<u>48</u>	<u>48</u>	<u>48</u>	<u>48</u>
Total Cash In	<u>135</u>	<u>646</u>	<u>453</u>	<u>336</u>	<u>350</u>	<u>374</u>	<u>370</u>	<u>353</u>
CASH OUT								
Inventory Increase	-	21	62	60	24	-	-	-
Plant, Equipment, Livestock	77	481	373	84	-	44	55	8
Repayment Long Term Loan	-	-	-	28	28	28	28	28
Repayment Medium Term Loan	-	-	-	-	20	20	20	20
Profit Sharing-Employees	-	-	-	27	25	24	25	25
Legal Reserve	-	-	-	13	13	12	13	13
Payment to Farmers Trust	-	-	-	-	29	39	40	43
Tax on Trust Payments-20%	-	-	-	-	6	8	8	9
Cash Dividend to Farmers	-	-	-	10	12	14	16	18
Cash Dividend to Investors	-	-	-	69	115	115	115	115
Total Cash Out	<u>77</u>	<u>502</u>	<u>435</u>	<u>291</u>	<u>272</u>	<u>304</u>	<u>320</u>	<u>279</u>
CASH BALANCE AT YEAR END	58	144	18*	45	78	70	50	74

*This cash balance may be too low, particularly volume to take advantage of low points in the price. no attempt is made to increase cash by further year. However, there is every indication that sales are predicated. It would only take a small in cash balance, since practically no additional

9	10	11	12	13	14	15	16	17	18	19	20
74	109	158	190	126	214	301	378	401	408	457	509
257	260	262	262	262	262	262	262	262	262	262	262
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
<u>48</u>											
<u>379</u>	<u>417</u>	<u>468</u>	<u>500</u>	<u>436</u>	<u>524</u>	<u>611</u>	<u>688</u>	<u>711</u>	<u>718</u>	<u>767</u>	<u>819</u>
-	-	-	-	-	-	-	-	-	-	-	-
-	-	46	132	9	-	-	44	55	8	-	-
28	26	-	-	-	-	-	-	-	-	-	-
20	-	-	-	-	-	-	-	-	-	-	-
25	26	26	26	26	26	26	26	26	26	26	26
13	13	2	-	-	-	-	-	-	-	-	-
41	41	41	42	10	10	10	10	10	10	10	10
8	8	8	9	2	2	2	2	2	2	2	2
20	30	40	50	60	70	80	90	95	100	105	110
<u>115</u>											
<u>270</u>	<u>259</u>	<u>278</u>	<u>374</u>	<u>222</u>	<u>223</u>	<u>233</u>	<u>287</u>	<u>303</u>	<u>261</u>	<u>258</u>	<u>263</u>
109	158	190	126	214	301	378	401	408	457	509	556

if it interferes with animal feed purchases in large structure of certain crops like sorghum. However, short term borrowing. This may be necessary for one corn yields will increase to above the hectare on which increase per hectare to provide a substantial increase operating cost would arise.

PROFORMA BALANCE SHEETS
(dollars)

YEAR	1	2	3	4	5	6	7
<u>ASSETS</u>							
Cash	58	144	18	45	78	70	50
Cash-Legal Reserve ^a	-	-	-	13	26	38	51
Inventories	<u>-</u>	<u>21</u>	<u>83</u>	<u>143</u>	<u>167</u>	<u>167</u>	<u>167</u>
Total	58	165	101	201	271	275	268
Plant, Equipment, Livestock	77	558	931	1,015	1,015	1,015	1,015
<u>Less-Depreciation Allowance</u>	<u>11</u>	<u>53</u>	<u>99</u>	<u>147</u>	<u>195</u>	<u>199</u>	<u>192</u>
Net	<u>66</u>	<u>505</u>	<u>832</u>	<u>868</u>	<u>820</u>	<u>816</u>	<u>823</u>
<u>TOTAL ASSETS</u>	<u><u>124</u></u>	<u><u>670</u></u>	<u><u>933</u></u>	<u><u>1,069</u></u>	<u><u>1,091</u></u>	<u><u>1,091</u></u>	<u><u>1,091</u></u>
<u>LIABILITIES AND NET WORTH</u>							
Medium Term Debt	50	100	100	100	80	60	40
Long Term Debt	<u>50</u>	<u>375</u>	<u>500</u>	<u>472</u>	<u>444</u>	<u>416</u>	<u>388</u>
Total Debt	100	475	600	572	524	476	428
Legal Reserve ^a	-	-	-	13	26	38	51
Share Capital Paid-In	100	460	460	460	460	460	460
Earned Surplus	<u>(76)</u>	<u>(265)</u>	<u>(127)</u>	<u>24</u>	<u>81</u>	<u>117</u>	<u>152</u>
Total Net Worth	<u>24</u>	<u>195</u>	<u>333</u>	<u>497</u>	<u>567</u>	<u>615</u>	<u>663</u>
TOTAL LIABILITIES AND NET WORTH	<u><u>124</u></u>	<u><u>670</u></u>	<u><u>933</u></u>	<u><u>1,069</u></u>	<u><u>1,091</u></u>	<u><u>1,091</u></u>	<u><u>1,091</u></u>

EXHIBIT VII

AT YEAR ENDS CONSOLIDATED OPERATIONS
rounded to nearest thousand)

8	9	10	11	12	13	14	15	16	17	18	19	20
74	109	158	190	126	214	301	378	401	408	457	509	556
64	77	90	92	92	92	92	92	92	92	92	92	92
<u>167</u>												
305	353	415	449	385	473	560	637	660	667	716	768	815
1,015	1,015	1,015	1,015	1,015	1,015	1,015	1,015	1,015	1,015	1,015	1,015	1,015
<u>232</u>	<u>280</u>	<u>328</u>	<u>330</u>	<u>246</u>	<u>285</u>	<u>333</u>	<u>381</u>	<u>385</u>	<u>378</u>	<u>418</u>	<u>466</u>	<u>514</u>
<u>783</u>	<u>735</u>	<u>687</u>	<u>685</u>	<u>769</u>	<u>730</u>	<u>682</u>	<u>634</u>	<u>630</u>	<u>637</u>	<u>597</u>	<u>549</u>	<u>501</u>
<u>1,088</u>	<u>1,088</u>	<u>1,102</u>	<u>1,134</u>	<u>1,154</u>	<u>1,203</u>	<u>1,242</u>	<u>1,271</u>	<u>1,290</u>	<u>1,304</u>	<u>1,313</u>	<u>1,317</u>	<u>1,316</u>
20	-	-	-	-	-	-	-	-	-	-	-	-
<u>360</u>	<u>332</u>	<u>306</u>										
380	332	306	306	306	306	306	306	306	306	306	306	306
64	77	90	92	92	92	92	92	92	92	92	92	92
460	460	460	460	460	460	460	460	460	460	460	460	460
<u>184</u>	<u>219</u>	<u>246</u>	<u>276</u>	<u>296</u>	<u>345</u>	<u>384</u>	<u>413</u>	<u>432</u>	<u>446</u>	<u>455</u>	<u>459</u>	<u>458</u>
<u>708</u>	<u>756</u>	<u>796</u>	<u>828</u>	<u>848</u>	<u>897</u>	<u>936</u>	<u>965</u>	<u>984</u>	<u>998</u>	<u>1,007</u>	<u>1,011</u>	<u>1,010</u>
<u>1,088</u>	<u>1,088</u>	<u>1,102</u>	<u>1,134</u>	<u>1,154</u>	<u>1,203</u>	<u>1,242</u>	<u>1,271</u>	<u>1,290</u>	<u>1,304</u>	<u>1,313</u>	<u>1,317</u>	<u>1,316</u>

EXHIBIT VII - NOTES

a. The legal reserve is taken as a cash item, to be held in absolutely liquid form in accordance with the law. However, there are many ways in which this reserve might be managed to maximize interest which it earns while standing idle insofar as Model operations are concerned. As an example, if this reserve were handled as the Trust will handle its funds, wherein each year earned interest is no less than 10% and both interest and capital are reinvested in Government guaranteed paper, the following reveals the potential growth of the legal reserve:

<u>End of Year</u>	<u>\$ rounded to nearest 000</u>
4	\$ 13,000
5	27,000
6	42,000
7	59,000
8	78,000
9	99,000
10	122,000
11	136,000
12	150,000
13	165,000
14	181,000
15	199,000
16	219,000
17	241,000
18	265,000
19	292,000
20	321,000

Despite this obvious possibility to increase the legal reserve to add another kind of reserve fund to corporate assets, only the actual monies transferred to the legal reserve are included in the Pro Forma Balances, in order to present the most conservative projections of the inherent growth factors in the make-up of the Model.

Appendix 1

STAFF AND CONSULTANTS

STAFF

1. Simon Williams, Principal Investigator - Associate Director, International Marketing Institute
2. James A. Miller - Associate Director of Research, International Marketing Institute
3. Carole Samworth - Research Associate, International Marketing Institute

CONSULTANTS

4. Brian D. Buen - Currently, President of the Board and Associate Director, Institutional Development and Economic Affairs Service, Washington, D. C.; formerly, Fellow, Adlai Stevenson Institute of International Affairs; Department Advisor on Campesino Affairs, Latin American Bureau, Department of State; Director, Special Development Activities Program, U. S. A. I. D., Peru.

Mr. Buen consulted in the areas of political acceptance (Chapter 3, Part II) and in the analysis of anthropological data affecting acceptance of the Model by the farmers (Chapter 3, Part III).

5. Marwin T. Bohan - Currently an independent consultant specializing in the economic and political development of Latin America. Until his retirement from the Department of State in 1955, Ambassador Bohan had spent 35 years in Latin America, serving in eleven countries. Among his assignments he was Chief, U. S. Economic Mission to Bolivia; U. S. Commissioner on the Joint U. S. - Brazil Economic Development Commission; and, U. S. Representative on the Inter-American Economic and Social Council. In recent years, he has been a consultant to AID, the United Nations, the Interamerican Development Bank, several U. S. corporations, among others, and works out of Dallas, Texas.

Mr. Bohan conducted the inquiry into political attitudes referred to in Chapter 3, Part II and also participated in a review of the results of the anthropological studies referred to in Chapter 3, Part III.

6 Murray D. Bryce - Currently, President of Projects International, Incorporated, and Candian Projects, Ltd., both of which function as direct investment organizations and as consultants in economic development. Mr. Bryce, headquartered in Vancouver, B. C., Canada, was Senior Development Economist at Arthur D. Little, Incorporated, and remains a consultant to that organization; he was also an Operations Officer of the World Bank and conducted studies relating to project development, development institutions and development planning throughout Latin America, Asia and Africa. Mr. Bryce is author of two widely used reference books: Industrial Development - A Guide for Accelerating Economic Growth and Policies and Methods of Industrial Development, both published by McGraw-Hill.

Mr. Bryce participated in studies relating to project financing, referred to in Chapter 3, Parts VI and VII. He also analyzed the financial results of the Model and did all of the basic work required in preparing the financial projections included in Chapter 4.

7. Evalio Casas A. - Currently an independent dealer in animal feeds in the Guadalajara area, serving in particular the small dairymen scattered throughout the region.

Mr. Casas served as guide and advisor in locating sites; he has acted as intermediary between the staff and various architects, engineers and service companies from whom construction and other local costs were obtained; and, he served as one of the key interviewers in the valley site of the Model during the anthropological studies referred to in Chapter 3, Part III.

8. Luis Enciso C. - Currently full-time agronomist consultant and has been working on the Model project since the first test plantings of corn were made in the several alternative sites, starting in 1967. An "Ingeniero Agronomo" with a degree from the National Agricultural University, he was given leave from his post as Supervisor of Extension, Central Zone, State of Jalisco, with the Federal Ministry of Agriculture and Livestock, to consult with the study team covering the Model. Before then, Ing. Enciso had had 16 years field experience in various parts of Mexico in extension and technical assistance with public and private institutions.

9. Ernest J. Enright - Currently Director of Research, International Marketing Institute. Dr. Enright was Advisor on Marketing and Marketing Research, Institute of Business Administration, Istanbul University; Research Associate and Lecturer in Marketing at the Harvard University Graduate School of Business Administration; and has participated in the organization of training programs and market development institutions throughout the world.

Dr. Enright participated in the design and analysis of the market studies referred to in Chapter 3, Part VIII and, throughout the field work, has contributed critical comments as the design of the Model evolved.

10. Martin M. Fogel - Currently Hydrologist and Professor, Water Resources Research Center, University of Arizona. At one time Agricultural Engineer at South Dakota State College and Irrigation Engineer at the University of Nevada, Dr. Fogel was an independent consultant between 1956 and 1960 and subsequently spent several years as Consulting Irrigation Engineer, Arabian American Oil Company, Saudi Arabia; he has, in addition, been consultant on two major new irrigation projects in northwestern Mexico.

Dr. Fogel participated in an analysis of the engineering problems attendant to solving several drainage problems in the valley site of the Model.

11. Edward H. Heller - Currently, President of the Agribusiness Research Institute, Incorporated, and the Agribusiness Management Company, Incorporated, both of Tampa, Florida. A tax specialist, Mr. Heller was trained first in agriculture at the University of Florida and then in the law at New York University. He now specializes in problems relating to cooperatives, agribusiness, finance and taxation.

Mr. Heller contributed to the analysis and interpretation of Mexican tax laws and investment incentives referred to in Chapter 3, Part V.

12. Donald B. Hudman - Currently, Swine Specialist, Texas Agricultural Extension Service, College Station, Texas. Dr. Hudman was trained in Animal Nutrition at Texas A & M University and Iowa State University and was Associate Professor at the University of Nebraska before coming to Texas.

Dr. Hudman served as consulting expert in the feasibility analysis of the proposed Swine Division of the Model.

13. Reggie J. Laird - Currently, Soil Scientist, Mexican Agricultural Program, Rockefeller Foundation, and similarly with the International Crop Improvement Center for Corn and Wheat, both headquartered in Mexico City. The research on which the new practice of corn production of the Model is based, was directed by Dr. Laird. He has advised on the design of the test planting program from its inception in 1967 and has participated right along in interpreting results and in adapting the original research data to the valley site of the Model.

14. Fausto R. Miranda and his associate, Victor Pyro F. -

Lic. Miranda and Lic. Pyro, of the law firm Baker, Botts, Miranda, Santamarina and Steta, Mexico City, D.F., have provided legal counsel on all aspects of the Model. In addition, Lic. Miranda has provided deep insights into many aspects of the social, political and financial scene in Mexico and has in myriad other ways facilitated the development of the project and the achievement of such acceptance as it has among officials and among leaders in the private sector.

15. Oscar Nisino Saenz - Currently, hydrologist with the Ministry of Hydrolic Resources, Guadalajara office and perhaps the most knowledgeable person in the area relative to underground water. Ing. Nisino directed the search for underground water supplies in the valley, located the ideal spot for wells to serve the dairy and swine operation and provided cost estimates covering drilling, pumping and delivery.

16. Paul Spector - Currently, Director, International Research Institute of the American Institutes for Research in the Behavioral Sciences, Washington, D. C. The International Research Institute specializes in the analysis and interpretation of the human and social factors involved in the development process. Dr. Spector was trained in experimental psychology and since 1956 has applied his special skills to many different kinds of development projects, rural and otherwise, throughout the world.

Dr. Spector has participated but briefly in the Model project but has helped in the interpretation of the anthropological data referred to in Chapter 3, Part III.

17. Donald H. Spence - Currently, an independent consultant with residence in Salt Lake City, Utah, Dr. Spence lived and worked in Mexico for many years. He received his training at the University of the Andes, Bogata and the National University of Mexico, Mexico City. He was Thesis Director, School of Social Studies, University of Nuevo Leon, Monterrey, Mexico and prior to that, in the same city, was Acting Head, Department of Modern Languages, Monterrey Institute of Technology. Between 1960 and 1964, he also was Survey sub-Director, Archeological Survey of Northeast Mexico, conducted by the University of Texas for the Mexican National Institute of Anthropology and History.

Dr. Spence led the team of interviewers during the course of the anthropological study referred to in Chapter 3, Part III.

18. L. Pablo Stone - Currently, in charge of a rural development program for the Food and Agricultural Organization of the United Nations, Quito, Ecuador. From 1959 until 1968, Mr. Stone was Director of the Heifer Project, Incorporated, in Mexico, during which time he became widely known to and knowledgeable about the range of national and international institutions present in Mexico with the avowed aim of fostering rural development.

Mr. Stone conducted the survey of institutions which might be useful to the Model in the development and support of a long range educational program, as referred to in Chapter 3, Part IV.

19. Gerald H. Stott - Currently, Professor and Head of the Department of Dairy Science, College of Agriculture, University of Arizona. Trained in Physiolgy and Genetics in Dairy Science at Utah State Agricultural College and the University of Wisconsin, Dr. Stott was formerly Assistant Professor of Dairy Science at the University of Georgia.

Dr. Stott sarved as consulting expert in all aspects of the feasibility study of the Dairy Division of the Model.

In this regard, in the design of the physical plant of the dairy, Dr. Stott was supported by Dr. James D. Schuh, Associate Professor of Dairy Cattle Management, and, Dr. Frank Wiersma, Associate Professor of Agricultural Engineering, both of the College of Agriculture, University of Arizona.

20. Edwin J. Wellhausen - Currently, Director, Mexican Agricultural Program, Rockefeller Foundation and Executive Director, International Center for Crop Improvement of Corn and Wheat. While technical assistance to the Model project from the International Center was assigned to Dr. Laird (see No. 13, above), Dr. Wellhausen has provided on-going advice and counsel, not only to the corn work being done at the valley site of the Model but, as well, on all aspects .

of the project, particularly as related to gaining acceptance in official circles. Dr. Wellhausen has been instrumental in gaining the interest and support at the Ministry of Agriculture and Livestock.

21. Jose Zaragoza - Currently, independent consultant, Lic. Zaragoza is a specialist in rural development in Mexico, with many years of experience in the cooperative movement and in community development. Trained for the ministry, with advanced studies in the social sciences at the Gregorian University, Rome, Lic. Zaragoza was attached from 1954 to 1968 (when he took leave due to illness) to the institution "Secretariado Social Mexicano", created by the bishops of Mexico to further social development throughout the nation. It was during this time that he led the development of the cooperative movement in Tacambaro, State of Michoacan, perhaps the most successful community-wide program in the country.

Lic. Zaragoza participated in the analysis of the anthropological data referred to in Chapter 3, Part III. It is hoped to utilize his services to facilitate the entry of the Model into the valley site, if and when the corporation is financed.

22. Instituto Jalisciense de Promocion y Estudios Economicos, A.C. - This is a research organization, partly financed by the joint Chambers of Industry of Jalisco and partly by means of consulting contracts. During 1967, the staff of the Institute was retained to help analyze conditions at each of over a dozen potential sites, as one means of narrowing the search.

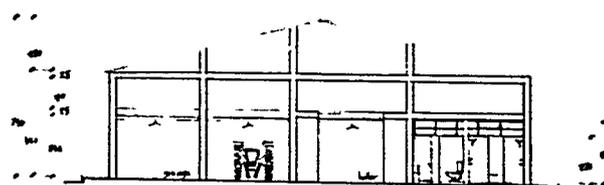
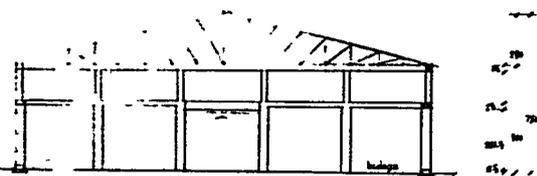
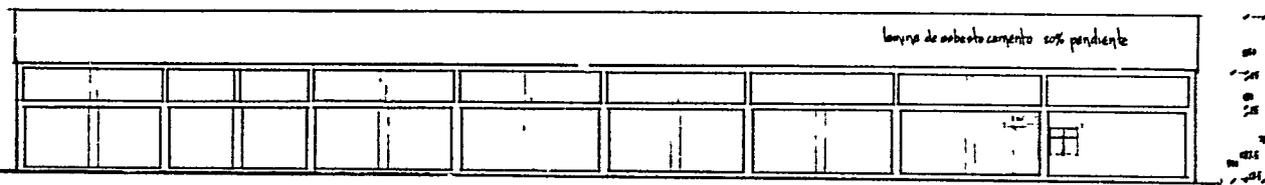
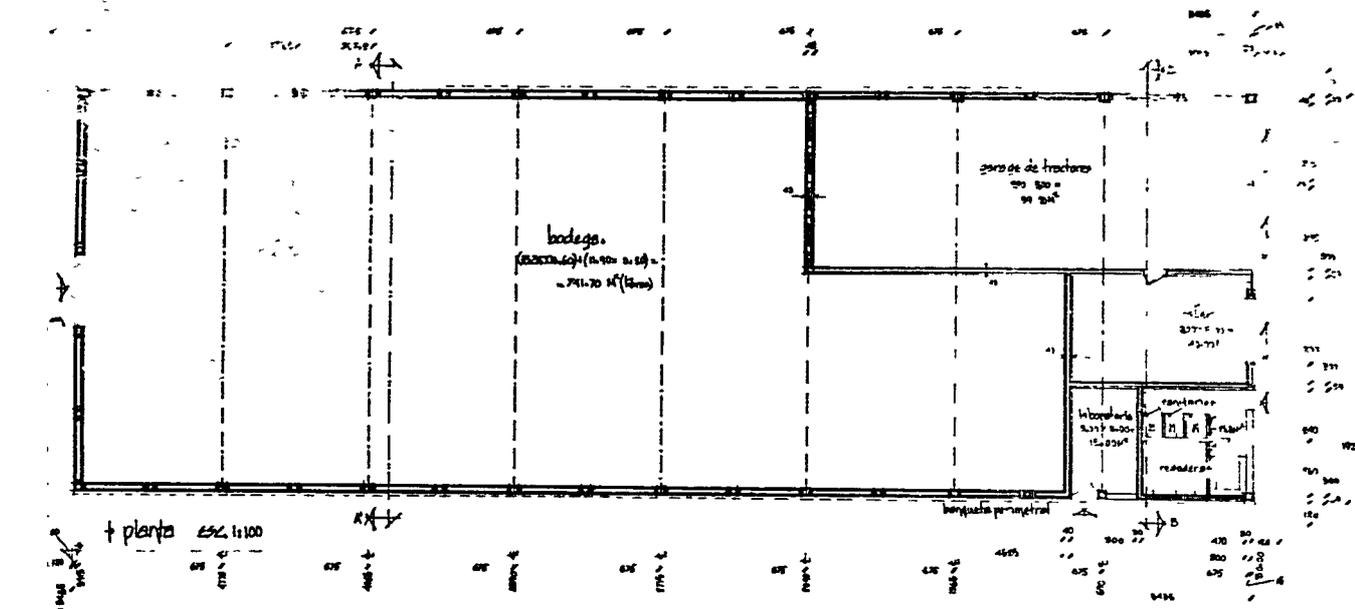
In addition, the services of the Institute were used to gather certain data useful in the market analyses referred to in Chapter 3, Part VIII.

23. Finally, the constant guidance and invaluable assistance in making key contacts throughout the official and financial community of Mexico, of Lic. Jose Carral, Representative in Mexico and Vice-President of the Bank of America; Lic. Fernando Aranguren, of Aranguren y Cia., S.A.; Sr. Abelardo Garcia Ramirez, Director General of Embotelladora Aga, S.A.; Sr.s Guillermo and Gustavo Martinez of Productos de Trigo, S.A.; Sr. Salvador Mayorga Cameros, Director General of Fogusa, S.A.; and, Lic. Juan Delgado Navarro, Head, Department of Economics, State of Jalisco, must be acknowledged. While the help of these men does not come under the classification of formal consultants, they have, indeed, performed valuable consulting services from the very start of field work in November, 1966.

Appendix II

MAJOR CONSTRUCTION DETAIL

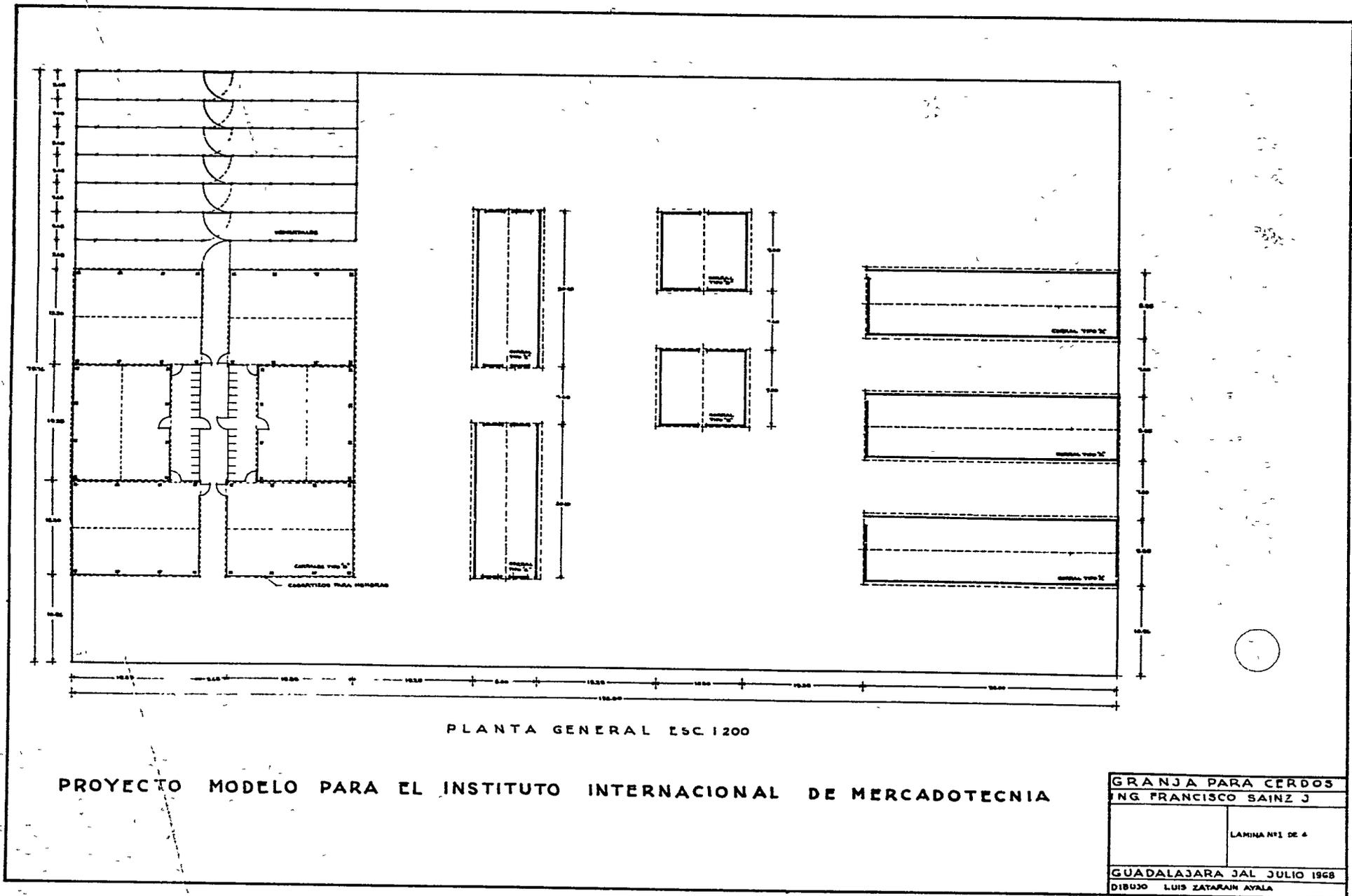
The following illustrations may be of interest. The plans were prepared using the metric system and Spanish to facilitate getting cost estimates and discussions of alternative materials, dimensions, among other factors affecting cost. The warehouse for the grain operation was designed by the project staff. The dairy was laid out by the consultants from the University of Arizona; the swine layout was sketched out by Dr. Hudman from Texas A & M University (see Appendix I, listing the consultants to the project and their background).



+ anteproyecto de bodegas
 instituto de mercadotecnia
 set del '80.
 proyecto: ing. francisco sáinz j.
 dib: j.e.m.g.

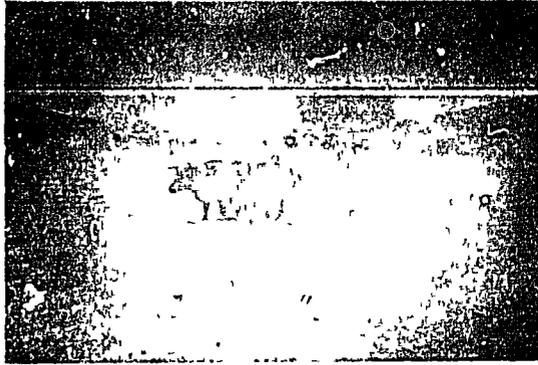
WAREHOUSE AND SHOP FACILITY

This structure will accommodate supplies for crop practice and will be used to store grain for the farmers off-season. A small equipment storage and repair section is located at one end, together with a room for making laboratory analyses of the corn, and its own sanitary facilities.



LAYOUT OF SWINE DIVISION MODULE

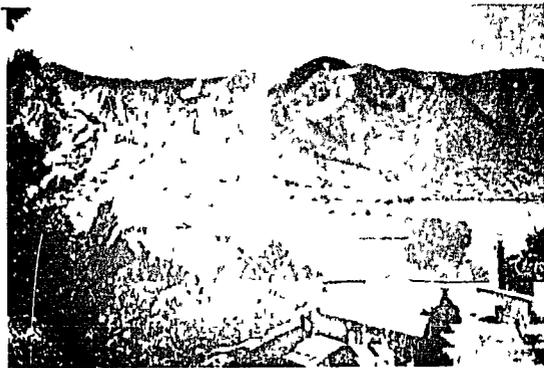
This layout shows the breeding stock pens, nursery, growing and finishing facilities. The module will be duplicated to form the entire facility.



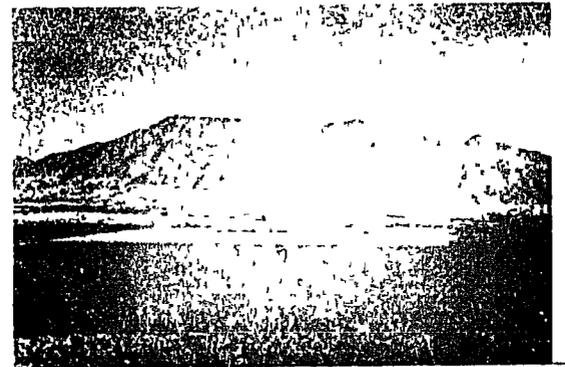
Animal power and a steel moldboard plow are dominant. A few tractors are found in the valley and are frequently used on hire at the time of land preparation for the corn crop. Oxen are most common; some horses and burros are used as well.



Most of the corn sold commercially is shelled by these portable gasoline driven machines and bagged for transportation. The Model will eliminate bagging in its marketing operation.



A typical Mexican valley. Surrounded by mountains, less flat than it appears at first glance. The main basin free of rock, the soil heavy, deep but manageable.



The people and their village - a long way to go but definitely well advanced from the primitive state.

