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THE FEASIBILITY OF INTEGRATED CORN GRAIN MILK AND SWINE PRODUCTION IN JALISCO, MEXICO

A TENTATIVE INVESTMENT PROSPECTUS

A Model Program for Economic
and Social Improvement of
Agricultural Communities of
Small Scale Farmers

SUMMARY

1. This is a project to establish a privately financed stock corporation (called the Model) in the State of Jalisco, with an initial capital investment of U.S. $ 960,000. The Model will be a joint venture. The partners will be a group of farmers and a group of investors from outside of the farming area.

2. The investors put up all the capital. They take all the risk. They provide management. The farmers contract, voluntarily, to produce corn grain under supervision and to market their crop through the Model. Management of the Model is directed to higher yields, higher family income and diversification.

FROM THE PROFIT GENERATED FROM NEW HIGH YIELDS OF CORN GRAIN AND FROM DIVERSIFICATION, FUNDS ARE SET ASIDE BY MANAGEMENT WHICH ENABLE THE FARMERS TO BUY OUT THE EQUITY OF THE INVESTORS.

WITHIN TWENTY YEARS, FROM THEIR MANAGED SAVINGS, THE FARMERS HAVE FULL OWNERSHIP AND CONTROL AND THE INVESTORS LEAVE.

3. The Model will be a Mexican company, managed by Mexicans. Its objective is to demonstrate a way for private enterprise to contribute in a dynamic way to the economic and social improvement of agricultural communities and, at the same time, bring about a sharp, rapid increase in food supplies of lower price, better quality and more varied nature.

4. The Model will be financed largely by the private sector of Mexico. Supplementary financing will come from the United States. With the exception of normal relationships between the Government of Mexico and private banks which extend agricultural credit, no public funds and no special concessions will be asked for or required.

5. The Model will:

. Introduce, supervise, train and supply all of the necessary credit for an improved system of corn grain production on 4,500 hectares of adjacent land now farmed by 560 members of the ejidal communities of El Molino, Huejotitan, Zapotitan and San Marcos, in the municipalities of Jacotopec and Zacoalco. The Model will not own any land. The Model will not affect or influence the existing land tenure structure.

- Start a dairy of 600 milking head of Holstein cows with an output of 12,000 liters of cooled milk per day to be supplied to the pasteurizing industry of Guadalajara. Bull calves and cull milking cows will be fed improved diets and then sold into the Guadalajara market for high grade beef. Within three years, top quality milking cows which are surplus will be made available through sales to other Jalisco dairies to help herd improvement in the area.

- Start a swine operation which will maintain 600 brood sows and sell 10,800 top quality lean hogs (1,188,000 kilograms) per year into the meat markets of Guadalajara and Mexico City.

- Maintain studies to increase land productivity further during the entire year and to increase farmer income by processing locally produced raw materials. The intent is to add new investment, such as in the growing and processing of vegetables, whenever this can be proven feasible by careful analysis.

- Help in the design and implementation of educational programs directed at both the adult and youth population, so that the farmers can promptly take on management and operational responsibilities and be prepared to take over the entire enterprise when the investors are bought out and withdraw.

6. The transition of management and ownership from the investors to the farmers is accomplished as follows:

. In the beginning, all voting stock and full management control will be held by the investors. Farmers will be drawn into management as rapidly as their training and ability proceed.

. Each year, from the beginning of profitable operations, part of the earnings of the Model will be placed in a Trust, administered by a recognized and respected private banking institution. The Trust will invest these funds in non-agricultural sectors of the Mexican economy. When this fund reaches a sum equal to the current value of the original equity, it will be used to buy out the voting stock. At this point, no more than twenty years from the start of operations and possibly in less time, full ownership and management is passed to the farmers and the investors withdraw.

7. The amount of stock assigned to each cooperating farmer will be determined by the amount of corn grain he markets through the Model. Thus, each farmer will share in the profit and assets of the Model in relation to his contribution to earnings. Actually, earnings will be achieved from the dairy and swine operations. However, since every farmer is a corn producer, basing stock ownership on grain sales permits a fair and equitable distribution of ownership.

8. The actual allocation of stock and the first payment of cash dividends to cooperating farmers will be made no sooner than three years and no later than five years after operations begin. This will give each farmer time to learn the improved methods and attain his maximum production. Further, this will give management time to test the integrity and loyalty of each potential stockholder. The effect will be to give each farmer his proper share of stock and to give management a sense of stability in its relationships with the farmers.

9. The results expected from the project may be summarized this way:

For the Farmer and His Family

- Within three years, every farmer cooperating with the Model will increase his net income from farming by a factor of 3 - from a current average net income of U.S. $384 to almost U.S. $1,200. Actually, the majority of the people in the valley net about $200 from their land. For them, income will increase sixfold.

- Each cooperating farmer will save over U.S. $80 per year, beginning with the first year of participation, as a result of lower interest charges on loans. The average family now borrows $240 per year and pays an average rate of interest of 3.5 to 4.5%

per month. Under the credit system of the Model, this money will be available at an interest rate expected to be no higher than 1% per month, and may be lower. Credit will be supplied at an interest rate exactly equal to the cost of short term loans to the Model. No profit will be made on lending.

. Each cooperating farmer will save from U.S. $104 to 128 or more, per year, from the beginning of participation, as a result of being able to store one ton of his corn grain, free of charge, with the Model, until he needs it for household consumption. The only cost to the farmer is his production cost of roughly U.S. $28 - 32 per ton. It is now normal practice to sell everything possible at harvest in order to obtain cash. Thereafter, and until the next harvest, the average family buys 900 kilograms of grain back, at a local average price of U.S. $136 to $160 per ton. When the farmer obtains household grain in return for grain repaid at harvest, the actual cost of borrowed corn may double or triple the cash price.

. Each cooperating farmer will save, on the average, over U.S. $120 per year in interest charges which now result from accumulated past debt, as the Model takes over this debt in three years. Despite their best and honest effort to repay past loans, the actual situation in the valley is this: farm income and all other income is insufficient to get out of debt permanently; good years for farming

and off-farm employment are more than offset by bad years, increased family size and hence increased family needs, and, as well, a lack of low cost credit to use for increased productivity. The average perennial debt per family in the valley is between U.S. $320 to $400. From the beginning and through Year 3 of cooperation, farmers, in addition to new credit for farming and personal requirements, will be allowed U.S. $120 per year repaid directly to their creditors. This new loan will be repaid each year, at harvest, in the form of grain taken from the high level of production of the Model system of farming.

ADDED TOGETHER, THE FARMER WHO PLACES ALL HIS FARMLAND - AVERAGING 8 HECTARES - UNDER MODEL CORPORATION MANAGEMENT WITHIN THREE YEARS INCREASES HIS NET INCOME TO ABOUT U.S. $ 1,520 FROM A CURRENT AVERAGE OF U.S. $384. FURTHER, HE IS THEN FREE OF LONG TERM DEBT, AND REAL SAVINGS CAN ACCUMULATE IN THE COMMUNITIES.

- Starting Year 4 of operations, cash dividends of U.S. $10,000 will be distributed to farmers. These dividends will increase year by year; by Year 20, they will have increased to U.S. $80,000 per year.

- Starting Year 4 of operation, the Model will create a Trust Fund which, by the end of Year 12 will be large enough to amortize the original equity and by Year 20 to fully buy out the investors. At that time, the farmers become the owners and operators of the Model.

- In Year 21, or sooner, the farmers, in reality at no cost to them or their government, become owners of these assets:

  - livestock with a market value, based on 1968 prices, of about U.S. $446,000

  - a cash depreciation fund and value remaining in undepreciated buildings and equipment equal to U.S. $567,000

  - a legal reserve fund of U.S. $92,000 capable of earning roughly 8 to 10% per year if carefully invested in the industrial sector of the Mexican economy

- From the year they take over the Model, the farmer stockholders will earn a profit averaging an additional U.S. $380 per year per farmer of cash income. This assumes no growth in business on the part of the Model. There is every reason to believe that the earning power of the Model will grow beyond the integrated corn - milk - swine operation with which it will start.

ADDED TOGETHER, COOPERATING FARMERS, IN TWENTY YEARS, WILL INCREASE THEIR ANNUAL NET CASH INCOME FROM AN AVERAGE OF U.S. $384 TO AN AVERAGE OF U.S. $1,920. AT THE SAME TIME, EACH FARMER OWNS CORPORATE ASSETS AT AN AVERAGE VALUE OF U.S. $2,000.

IN ADDITION, THE RISK OF ASSURED INCOME WILL HAVE BEEN SPREAD THROUGH DIVERSIFICATION OF LOCAL ENTERPRISE PLUS INVESTMENT IN THE GENERAL INDUSTRIAL SECTOR OF THE MEXICAN ECONOMY.

- Beginning Year 1, the Model will employ and train local people in the dairy, swine and grain divisions. New and real goals will exist for talented youth. Adult leaders in the community will be drawn quickly into management and technical responsibility. Community development will be encouraged as wealth and ambition and hope rise. Throughout the region, the Model will serve to inspire and lead. The latent pride in the people of the valley communities will find the most constructive kind of outlet.

For the Investors

• It is estimated that the investors will earn, after all taxes and profit sharing , no less than 20 to 25% on their paid-in equity capital, each year for the twenty years of their participation, on the basis averaging net accumulated income over this period of time. In addition, the full amount of the paid-in equity capital plus its increased value is recovered by the time the farmers become the owners. For this return, the investors bear all of the risk and take full responsibility for the achievement of the goals to which the enterprise aspires.

For Jalisco and Mexico

• The State and the Nation are given a tool to speed the production of more and better food supplies at lower cost, as well as a means of accelerating the social and economic development of agricultural communities. Where it proves feasible to apply this tool, it permits both public and private enterprise to work together for the common good and to extend greatly the effectiveness and impact of all available resources.

• The State and The Nation are placed in a position of leadership in the general attack on world hunger and rural depression. Since its own revolution, Mexico has come to command the respect and attention of people everywhere; what is achieved in Mexico is a source of guidance throughout the world. A successful Model in Mexico, blending the best of public and private enterprise, will surely encourage the adaptation of this means of rural development over the widest area, in the shortest period of time.

10. The following Appendices provide further detail:

Appendix I	- Location and Area
Appendix II	- Financial Projections and Notes
Appendix III	- Legal and Operating Structure
Appendix IV	- Market Analysis
Appendix V	- Cultural and Social Background
Appendix VI	- Grain Production Experiments
Appendix VII	- Opportunities and Problems
Appendix VIII	- History of the Project

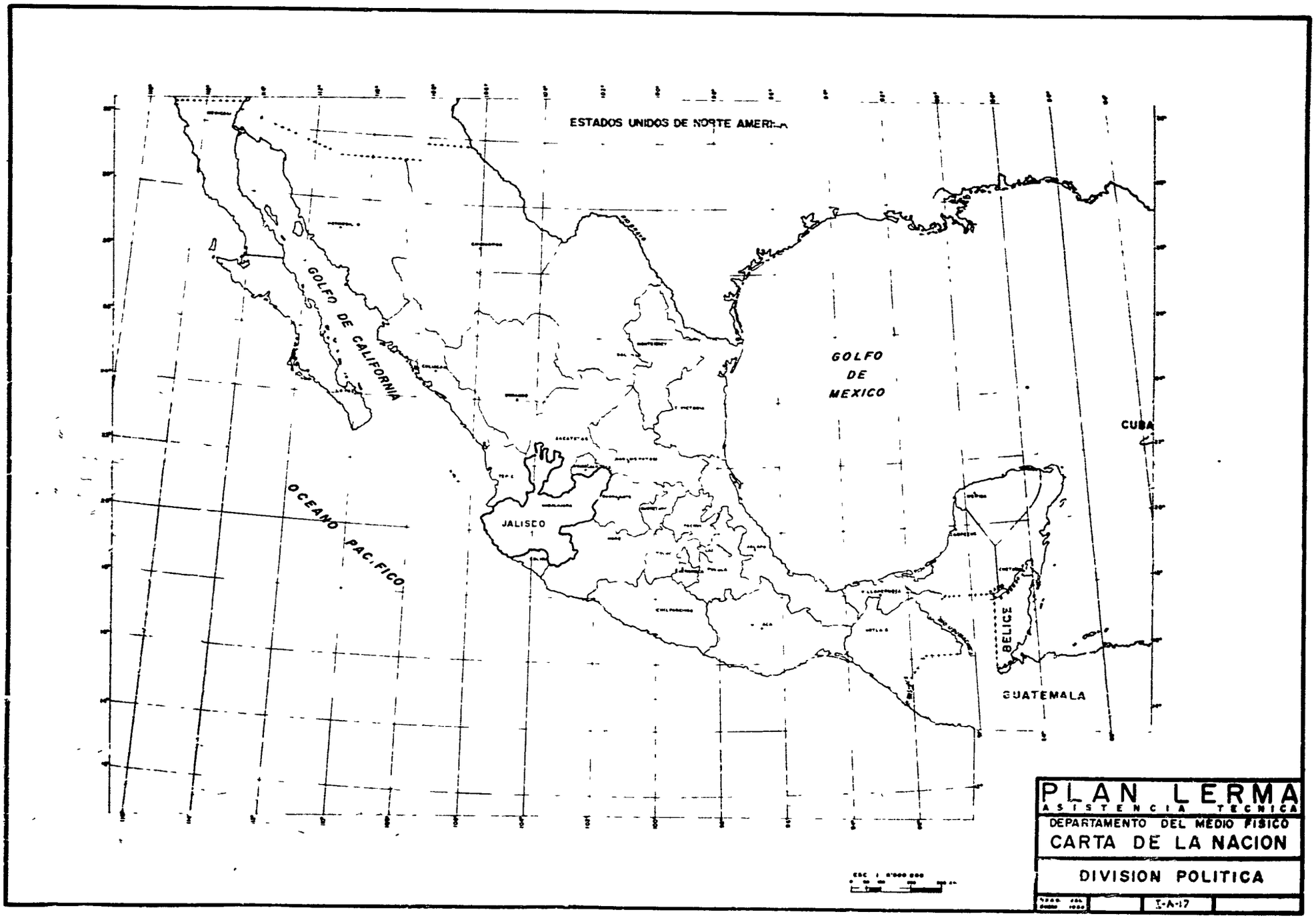
APPENDIX I

LOCATION AND AREA

The three maps shown in the following pages locate the site of the Model.

The valley, which contains approximately 6,000 hectares of land under some form of cultivation, lies 50 kilometers (30 miles) from its center to the center of Guadalajara. A main, paved highway crosses the valley - north to south. This is Highway 15, a major artery connecting Guadalajara and the northwest of Mexico with Mexico City, via Morelia and Toluca. Power and telephone lines traverse the valley. Huejotitan, Zapotitan and El Molino have electricity.

The dairy, swine operation and central warehouse of the Grain Division will be located just to the west of the highway, at a point roughly equally distant between Huejotitan and Zapotitan.


ESTADOS UNIDOS DE NORTE AMERICA
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GOLFO DE MEXICO
CUBA
OCEANO PACIFICO
JALISCO
BELICE
GUATEMALA
PLAN LERMA
ASISTENCIA TECNICA
DEPARTAMENTO DEL MEDIO FISICO
CARTA DE LA NACION
DIVISION POLITICA
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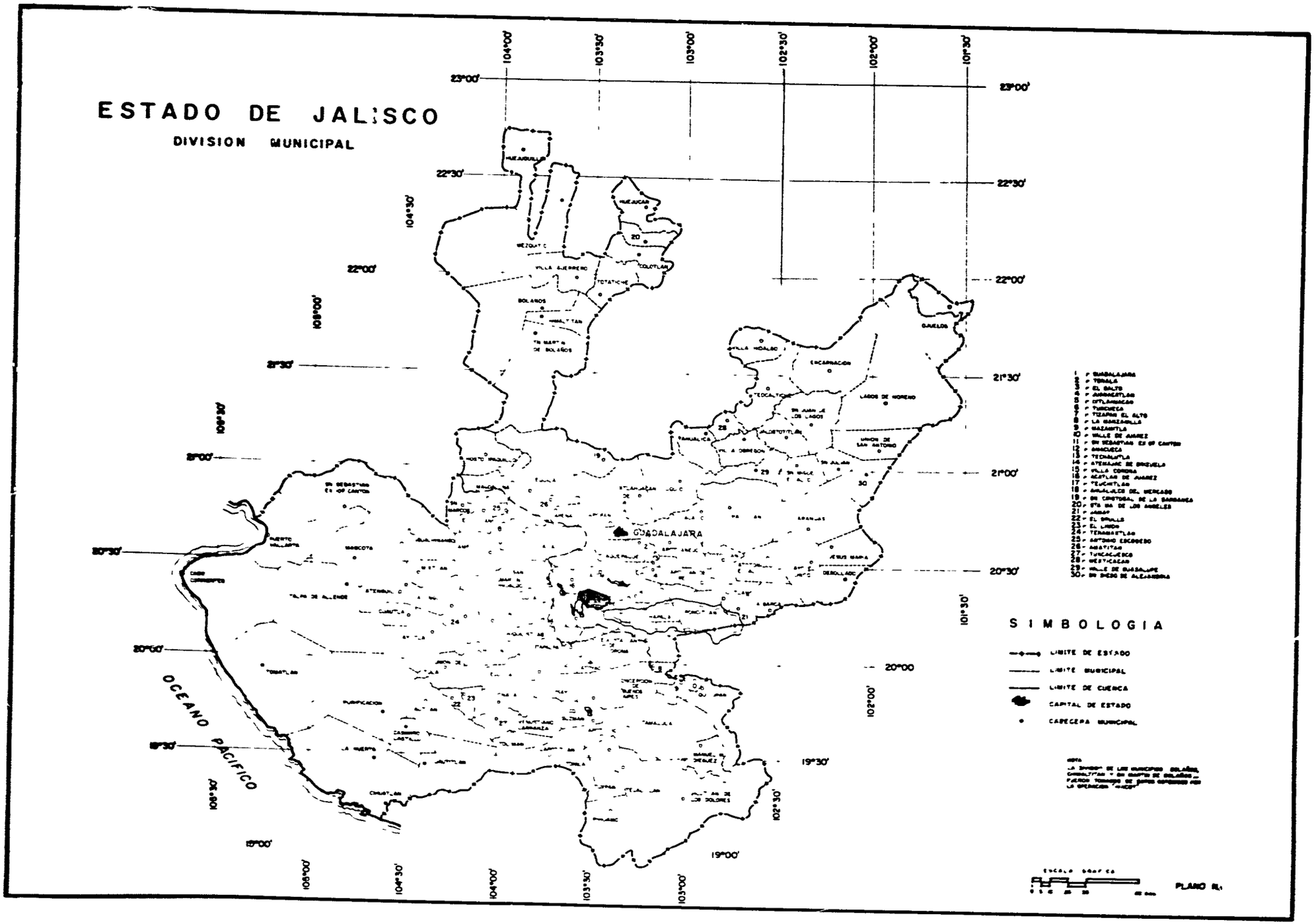
ESTADO DE JALISCO
DIVISION MUNICIPAL
GUADALAJARA
OCEANO PACIFICO
SIMBOLOGIA
LIMITE DE ESTADO
LIMITE MUNICIPAL
LIMITE DE CUENCA
CAPITAL DE ESTADO
CABECERA MUNICIPAL
1 - GUADALAJARA
2 - TONALA
3 - EL SALTO
4 - JUANACATLAN
5 - OTLAMANGA
6 - TUXCUECA
7 - TIZAPAN EL ALTO
8 - LA MANZANILLA
9 - MAZAMITLA
10 - VALLE DE JUAREZ
11 - SN SEBASTIAN EX OF CANTON
12 - ANACUECA
13 - TECALITLAN
14 - ATENGUILLO DE GRIJALVA
15 - VILLA CORONA
16 - ACATLAN DE JUAREZ
17 - TEUCHITLAN
18 - AMALAJUCO DEL MERCADO
19 - SN CRISTOBAL DE LA BARRANCA
20 - STA MA DE LOS ANGELES
21 - JUAREZ
22 - EL GRULLO
23 - EL LIMON
24 - TENAMASTLAN
25 - ANTONIO ESCOBEDO
26 - ARANITAS
27 - TUNCAQUENCO
28 - MESTICACAN
29 - VALLE DE GUADALUPE
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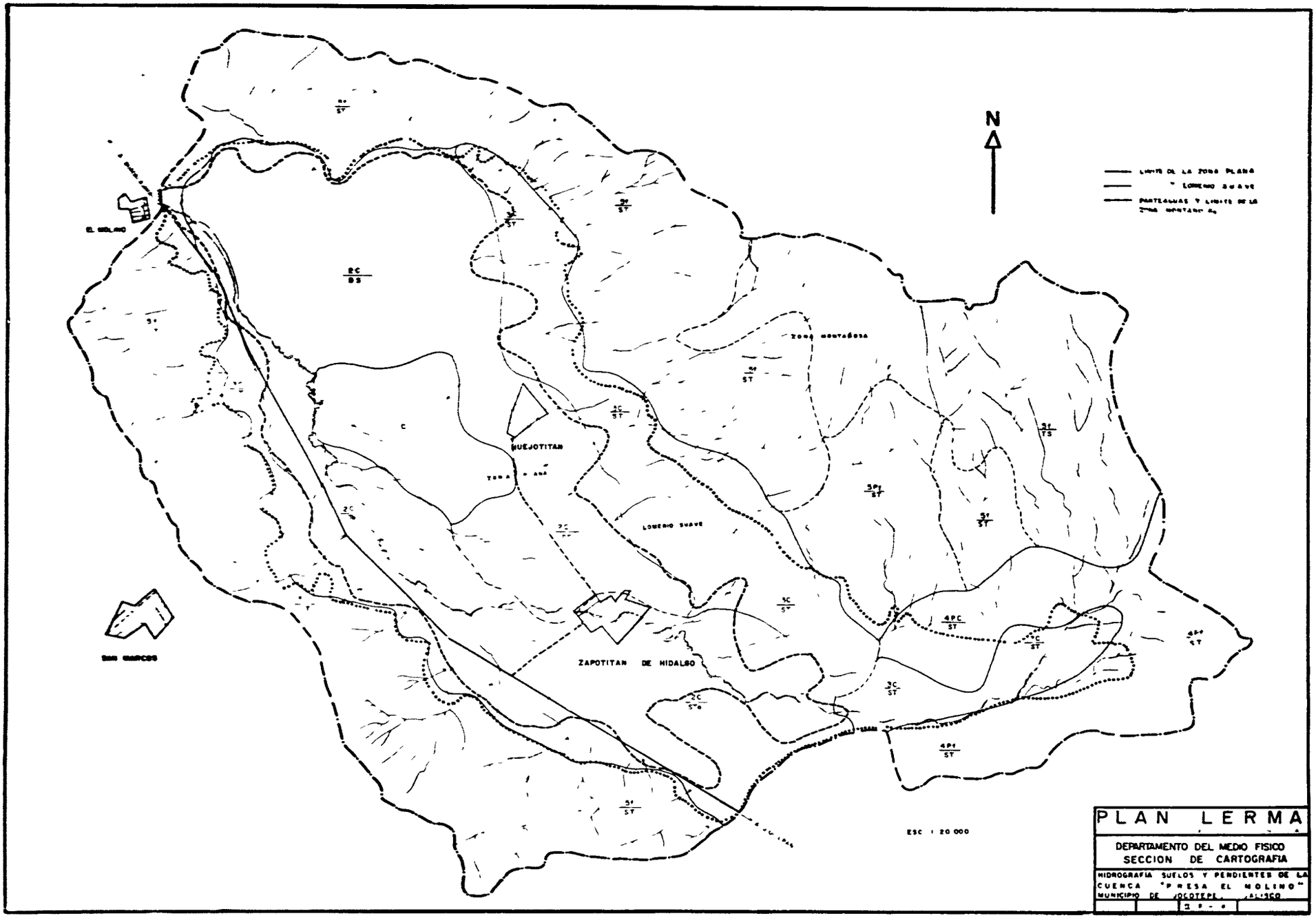
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" LOMERIO SUAVE
PARTEAGUAS Y LIMITE DE LA ZONA MONTAÑOSA
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DEPARTAMENTO DEL MEDIO FISICO
SECCION DE CARTOGRAFIA
HIDROGRAFIA SUELOS Y PENDIENTES DE LA CUENCA "PRESA EL MOLINO"
MUNICIPIO DE JOCOTEPEC, JALISCO

APPENDIX II

1. The following charts and notes illustrate the financial viability of the Model and its ability to achieve its objectives. The distribution of earnings after taxes is meant to be neither fixed nor arbitrary. Rather, the presentation as shown is one clear indication of what is made possible by the Model. As investors are formed into a group to implement the Model and bring to bear their varied experience on its management, new and creative ideas will undoubtedly emerge to make the Model even more fruitful for all concerned.

2. In addition to the notes and figures to follow, a further comment on the annual credit system and how it is to be financed, is necessary.

The notes following Chart II-A reveal the nature, need and magnitude of the credit system to be applied. The money for the credit is to be derived from loans made through Mexican private banks, at no more than 12% interest per year. The key question to be answered in obtaining these loans is: what are the guarantees supporting the loans? No final answer to this basic question can be given at the time of

writing this "tentative investment prospectus", but certain lines of current investigation which are in progress are relevant:

a. The cooperating farmers will be "ejidatarios". For those not familiar with the agrarian reform movement in Mexico, it may be noted that the ejidatarios are those agrarians whose lands are held in perpetuity by the Government. The farmers have the right to produce and market by free choice; the land, as well, can pass by inheritence to successive generations. However, the land can not be sold, rented or mortgaged by legal means. Therefore, an ejidatario can only offer his harvest as collateral against credit used to improve his farming practice. While a contract which uses the harvest as security for a loan is a legally binding document, in truth, its value, especially to a corporate body such as the Model, lies in the integrity of the individual. Because this kind of security has not been highly valued, historically, credit for the cost of improved agricultural practices has become the unique responsibility of government, acting through such agencies as the Banco Ejidal, the Banco Nacional Agropecuario and the Fondo de Garantía y Fomento para la Agricultura y Ganaderia of the Banco de Mexico.

The Model intends to enter into written contractual agreements with each cooperating farmer. These contracts will cover the amount

loaned, the interest rate, repayment at harvest in the form of grain, the price of the grain to be purchased by the Model and the marketing plan including the time lapse between delivery to the Model and cash payment to the farmer of such balance as is due after loan repayment. As well, the contracts will include the right of the Model management to enter a farmer's land and apply a critical practice, e.g., application of fertilizer, if at the time the farmer is not properly tending his fields under technical supervision. This right will also include the right to charge for this service, at the going local rate and at the same interest cost as the rest of the credit, both to be collected at harvest in the form of grain.

However, it is intended to seek a guaranty for some part - or all - of the credit from one or more of the government banks dealing with ejido credit. This will not involve funds obtained from these banks but only a guaranty against loss and/or the cost of delinquent repayments. Intellectually, it is logical and creative for the public institutions to assume this role as part of the general effort to attract private credit and investment capital into agricultural development, particularly as it concerns small scale farmers...uniquely as it concerns ejitatarios and their counterparts throughout the world. In the original concept of the Model, however, it was not intended to so involve public credit institutions. It was thought too difficult and

time consuming to establish policy and procedure. This thought has changed, recently, because precedents have been located which make the approach feasible and readily operable. These cases are being thoroughly investigated. Enough is now known, however, to indicate that at least in the Banco Ejidal policy has been established and credit guarantees have been extended to cover loans made to ejidatarios by private banks, even though no funds of the Banco Ejidal were involved. Full details will be made available at an early date to all potential investors. It does seem probable that a major part of the credit risk can be covered this way. This will not only make it easier to finance the investment capital required. As well, it will represent the power of the Model to add strength to the attack on rural development made by both the private and public sectors in Mexico and in any other country.

b. As outlined in the notes to Chart II-A, the credit to be extended is to cover both improved farming practices and personal needs. This extends even further the role of personal integrity in ensuring repayment and success of the system. While this may or may not complicate or limit the guarantees obtainable from public agricultural credit banks, explorations have been started to produce a second guarantor who would share the credit risk, with particular emphasis on the repayment of personal credit. This exploration has led to an exciting possibility, namely, the church. Granted that church participation presents very

delicate issues, not merely in predominantly Catholic Mexico, but in any culture dominated by particular religious philosophies and institutions. Nonetheless, the churches are increasingly concerned with the slow pace of rural development throughout the world and with the need to combine their resources if they are to become a more potent force for social improvement. In terms of social service, each year witnesses more intense and dramatic efforts by churchmen of all sects to work together in the field of rural development, without any reference to church affiliation...the epitome of this may be the Indian Social Institute in New Delhi, where all of the churches from the western world are jointly engaged in agricultural extension work under the administrative leadership of a Catholic priest.

With the foregoing in mind...and keeping in mind as well the fact that the Model project in Mexico is intended for application worldwide... discussions have been started with representatives of the Church World Services, National Council of Churches, United States of America, to the end of getting a commitment to guaranty some significant part of the credit loan obtained by the Model. First response was cordial, even enthusiastic. Funds are available and precedents do exist for an action of this sort, although this precise application of support is novel. Further discussions have been scheduled, hopefully to lead to a decision to so act, if necessary and if such support acceptable, within agreed upon quantitative limits.

More details on the quality and magnitude of this source of support for the credit system will be available in the near future. It may be noted that contact has been established with top officials in the Catholic Church of Mexico, with a very cordial response and an offer of help. Further, contact has been established with the Institute of Social Studies, Gregorian University, Rome, center of training for Catholic priests dealing with rural development. Several graduates of the Institute are attached to the headquarters of the Catholic Church in Guadalajara and it is hoped to combine any financial assistance from the Churches of Christ with local field assistance, in the valley, in working with the people.

c. It is likely that the private banks of Mexico will be willing not only to make the credit loans but, as well, to share a greater part of the risk than might have been historically true. Part of the reason for this is the intense pressure from the Government on the banks to extend more agricultural credit. The Model offers a responsible mechanism through which to act. Beyond this, the management of the Model, by taking over the full administration of the loan, relieves the banks of the very high cost of making small loans. The risk, therefore, is calculable on new terms and, in part, can be more readily justified than would otherwise be the case. While no real test has been made of the reality of this possibility, interviews

among private bankers hold out the chance of acceptance by the banks of some percentage of the risk, against the signature of the management of the Model, backed by notes held by the Model against the harvest.

d. The Fondo de Garantía y Fomento of the Banco de México does have a limited amount of money to use as a backing for practice credit. It has been indicated that the Fondo would review sympathetically any proposal by the Model, via a private bank, for some such credit. Normally, the funds available to the Fondo to discount private bank agricultural credit paper can only be used for equipment, livestock and other material inputs, e.g., a well, judged to increase the ability of a farm or ranch to be more productive.

e. Finally, with respect to financing the annual credit system, it should be noted that certain amounts of cash are generated within the Model itself which could be applied against bad credit without jeopardizing the earnings by investors or the savings which permit the farmers to buy out the investors.

APPENDIX II - A

ESTIMATED INVESTMENT AND OPERATING RESULTS-CORN GRAIN DIVISION

(dollars rounded to nearest thousand)

YEAR	1	2	3	4
BUILDINGS				
Storage shed	32			
EQUIPMENT				
Tractors[b]	16	16		
Pickup trucks	13	3		
Sprays	6			
Testing facilities[c]	2			
Contingencies	5	4	2	
TOTAL PLANT AND EQUIPMENT	74	23	2	
ANNUAL OPERATING EXPENSES				
Purchase of corn grain[d]	435	1 120	1 362	1 362
Salaries and wages[e]	26	31	31	31
Energy, maintainance and supplies	16	20	20	20
Contingencies	3	3	3	3
TOTAL ANNUAL OPERATING EXPENSES	480	1 174	1 416	1 416
TOTAL CAPITAL REQUIRED	554	1 197	1 418	1 416
ESTIMATED OPERATING RESULTS				
Sales[a]	490	1 260	1 532	1 532
Less operating expenses	480	1 174	1 416	1 416
Net operating earnings before taxes	10	86	116	116

NOTE.- DATA CONSTANT FROM YEAR 4

NOTES - APPENDIX II - A

a. Sales are based on the following:

Year 1 -
- 1200 hectares under management (3,000 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
- 6,800 tons sold by farmers to the Model; 6,000 from the managed area; 800 from the remaining area farmed by the cooperating campesinos but not under management
- Buying price is U.S. $64/ton
- 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 -
- 4,480 hectares under management (11,200 acres)
- 560 farmers are involved; 90% of all farmers
- 21,280 tons sold to the Model

The Model does not expect to gain more than 90% cooperation among the total farmer population of 625. The appeal for association will be based on four considerations:

i. no risk to the farmer - each of the 400 farmers whose cooperation will be sought in Year 1 will be asked to put only 3 of the 4 or 5 hectares normally planted to corn, under management. He will then be guaranteed:

- a return per hectare from the managed parcel no less than from the unmanaged area;

- that should the new practice merely yield an equal quantity of grain in comparison to his traditional practice, he will owe the Model no more per hectare than the amount he spent on the unmanaged area; and,

- the cost of the new practice in excess of his own will only be repaid out of real surpluses.

ii. low cost practice credit - The Model will extend credit at exactly the cost of money borrowed for the purpose. It is expected that credit funds can be obtained at no more than 12%/year. Further, the Model, unlike the farmers, can obtain certain lines of credit for agricultural chemicals and fertilizer at no or low interest, for the crop season, further reducing the actual interest charge on the total credit required. It is to be noted that those farmers in the valley who obtain any practice credit, do so at interest rates which average between 3.5 and 4.5% per month. Very few have been able to utilize credit from government credit banks.

iii. extension of low cost personal credit - on the basis of direct study of the economic facts of life in the valley (see Appendix V), it is known that each family, on the average, borrows U.S. $240 per year for the combined requirements of farming and family emergencies. Because of excessive interest charges, which not uncommonly are over 100% per year, and the ups and downs of crop yield, this debt tends to grow larger year by year, averaging close to U.S. $400 per family, currently. This is true despite a long and impressive history of responsible effort to pay back their debt on the part of the entire community of farm families. Income over and above that obtained from farming has not been sufficient to make up the difference.

The Model must take responsibility for assuring a source of personal credit if the farmers accept credit for farming. The reality of money lending practices dictate this demand. For example, in recent years, farmers who have taken credit loans from government agricultural banks have had their personal credit requirements cut-off or have been faced with double or triple rates of interest.

It is estimated that roughly 40%, or U.S. $96, of what each family borrows is required for personal emergencies. Each farmer will be assured that such credit will be available on application to the Model

In a dramatic 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 3.5 to 4.5%/month interest for 1%/month or less, 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 unions which will take over all personal credit activities. At sometime in the future, these credit unions may well be able to take over the operation of the farm practice credit system but this prospectus makes no assumption that this will be the case.

In summary, the credit system requirements are as follows:

Year 1

- 1,200 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).....$154,000
- 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..... 240,000 U.S.$

• With interest and lines of credit charges added, the farmers return this credit in the form of grain valued at.....	291,000	U.S.$*

Year 2

• 3,700 hectares - practice credit.....	$474,000	
• 500 families - past debt relief.....	60,000	
• 500 families - new personal debt.....	48,000	
Total.....	$582,000	U.S.
• farmers return corn valued at.....	$721,000	U.S.

Year 3

• 4,480 hectares - practice credit	$573,000	
• 560 families - past debt relief.....	67,000	
• 560 families - new personal debt	54,000	
Total.....	$694,000	U.S.
• farmers return corn valued at.....	$862,000	U.S.

* 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.

Year 4

• 4,480 hectares - practice credit.....	$573,000	
• 160 families - past debt relief.....	19,000	
• 560 families - new personal debt.....	54,000	
Total.....	$646,000	U.S.
• farmers return corn valued at.....	$809,000	U.S.

Year 5

• 4,480 hectares - practice credit.....	$573,000	
• 60 families - past debt relief.....	7,000	
• 0 families - new personal credit.....	-	
Total	$580,000	
• farmers return corn valued at	$730,000	U.S.

Year 6 and After

• 4,480 hectares - practice credit.....	$573,000	
• no debt relief.....	-	
• no new personal credit.....	-	
Total.....	$573,000	
• farmers return corn valued at.....	$727,000	U.S.

The entire credit system will be very closely supervised. All loans will be subject to legally binding contracts. However, while these are useful, far more important to the success of any rural credit system is on-the-spot control. This will be exercised by the administration and the agronomists throughout the season and at harvest. Further, it is the intent of the Model to work closely, from the beginning, with the leaders of the communities to establish understanding and to attach value to what the Model is doing in the interest of the people. Throughout the world, experience has shown that one of the most effective mechanisms in assuring loan repayments and an honest response to the extension of credit is social pressure within the community to keep delinquents from destroying what is of benefit to all. The Model will take full advantage of this knowledge.

iv. <u>privilege of storing corn</u> - at harvest, each farmer will be allowed to place one ton of his grain in the Model warehouse, free of charge, until needed for household use but to be held no later than April 15 of the following season. It is assumed that with all of the monetary benefits available to him, the farmer will not feel the need to sell his entire harvest, even at the risk of having to buy back grain at a much higher price later on, as is now common practice. By holding a ton of corn free of charge which at most will have cost him U.S. $32 to produce, the farmer on the average will save U.S. $128 in cash and the interest charge on this money, each year.

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.

To guide the course of further investment by farmers or by the Model in tractors, very careful comparative field studies are planned for the 1968 season to determine precisely the cost-benefit relationships which are evidenced when the land is worked by animals and by tractors. All other factors, such as seed, fertilizer, pest control and soil type will be held as constant as possible.

c. The testing facilities referred to are merely those required to check moisture content of grain delivered by the farmers to the Model at harvest time.

d. The purchase price of corn grain is noted as U.S. $64/ton; the selling price is U.S. $72/ton. This price is based on the market conditions of 1967 and takes into account, first, the fact that the U.S. $72/ton reflects the lowest average buying price by the corn milling industry of Guadalajara in 1967; and, second, the fact that U.S. $64/ton approximates the average price received this same year by the farmers at the Model site (including a charge for transportation to Guadalajara). A further analysis of the market conditions affecting current and forecasted corn grain prices will be found in Appendix IV.

Actually, it will be the policy of the Model always to buy corn at U.S. $8 below the price at which it can sell it in the Guadalajara market. This will be the only price guarantee extended. If the Model can get, for example, U.S. $72.80/ton, the farmers will receive U.S. $64.80; conversely, if the selling price is U.S. $71.50 the farmers will get U.S. $63.20. The position is simply stated and it is believed that the farmers, if and when it becomes necessary to explain the situation, will understand (they have been the victims of price fluctuations many times): the Model does not control prices in the Guadalajara market and should prices rise, the farmers will be the beneficiaries rather than the Model Corporation; should prices fall, the farmers bear

this risk as their contribution to attracting the investors to their valley and, in doing so, are always 300% or more better off in relation to farming income than they would have been without their association with the Model.

e. Salaries and wages include 20% added over the base for social security benefits, on the basis of studies made of these costs in Jalisco, by the Instituto Jalisciense de Promoción y Estudios Económicos, A.C. Included in staff charges are:

<u>Year 1</u> -	Head agronomist.....	U.S. $6,560 -	base pay
	3 staff agronomists.....	12,000 -	"
	3 laborers.....	1,840 -	"
	1 secretary bookkeeper	1,600 -	"

<u>Year 2</u> - Add 1 additional agronomist

APPENDIX II - B

ESTIMATED INVESTMENT AND OPERATING RESULTS-DAIRY DIVISION

(dollars rounded to nearest thousand)

YEAR	1	2	3	4	5
BUILDINGS					
Silage storage[a]		18			
Concentrate storage[b]		50			
Milk parlor and office		20			
Corrals and sheds		100			
Houses[c]		9			
EQUIPMENT					
Tractor		7			
Pickup truck		3			
Feed preparation		10			
Feed distribution[d]		8			
Milking		27			
Waste disposal		3			
50 Kv generator[e]		8			
SITE PREPARATION		10			
LIVESTOCK[f]		40	320	40	
TOTAL PLANT AND EQUIPMENT[g]		313	320	40	
ANNUAL OPERATING EXPENSES					
Silage[h]		58	88	98	112
Concentrates		1	96	188	223
Breeding costs			8	12	12
Veterinarian costs			10	10	10
Energy, maintainance, insurance and supplies		1	12	12	12
Salaries and wages[i]		1	28	29	29
Training costs[j]		4	-	-	-
Consultants[k]		5	3	3	-
Preoperating costs[l]		4	-	-	-
Contingencies		8	8	8	8
TOTAL ANNUAL OPERATING EXPENSE		82	253	360	406
TOTAL CAPITAL REQUIRED		395	573	400	406
ESTIMATED OPERATING RESULTS					
SALES: Milk		-	330	435	435
Cull cows for beef		-	20	20	20
Fattenened bull calves		-	-	80	80
Surplus milk cows		-	-	-	50
TOTAL SALES		-	350	535	585
Less operating expenses		82	253	360	406
Net operating earnings before taxes		(82)	97	175	179

NOTE.- DATA CONSTANT FROM YEAR 5

NOTES - APPENDIX II-B

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 Garantía y Fomento para la Agricultura y Ganaderia. This approval brings with it an investigation by the technical staff of the Fondo de Garantía 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 Garantía 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 nonregistered 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).

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

Head, Dairy Division.....	U.S. $8,000	base	pay
1 secretary-bookkeeper.....	$1,600	"	"
Herdsman and five milkers.....	$6,000	"	"
Assistant herdsman..... $2,500	$[redacted]	"	"
Feed truck and tractor operator..... $1,840	$[redacted]	"	"
4 laborers @ $560 each.....	$2,240	"	"

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 preoperating cost noted covers primarily the labor necessary to support the Head of the Dairy Division in the preparation of silage in September.

APPENDIX II - C

ESTIMATED INVESTMENT AND OPERATING RESULTS-SWINE DIVISION

(dollars rounded to nearest thousand)

YEAR	1	2	3	4	5	6
BUILDINGS						
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]		6				
EQUIPMENT						
Tractors		6	6			
Pickup truck		3	-			
Feed mixing		4	1			
25 kv. generator[d]		5	-			
Contingencies		5	-			
LIVESTOCK						
Sows		37	-			
TOTAL PLANT AND EQUIPMENT		117	51	44		
ANNUAL OPERATING EXPENSES						
Feed		84	238	383	443	443
Boars[e]		4	4	4	2	2
Veterinarian		2	4	7	7	7
Salaries and wages[f]		7	11	15	17	17
Energy, maintainance, insurance, supplies		4	5	5	5	5
Consultants[g]		11	14	11	6	-
Contingencies		2	2	3	2	3
TOTAL ANNUAL OPERATING EXPENSE		114	278	428	484	477
TOTAL CAPITAL REQUIRED		231	329	472	484	477
ESTIMATED OPERATING RESULTS						
Sales[a]		66	263	502	598	598
Less operating expenses		114	278	428	484	477
Net operating earnings before taxes.		(48)	(15)	74	114	121

NOTE.- DATA CONSTANT FROM YEAR 6

NOTES - APPENDIX II - C

a. Sales revenues are based on the movement of 900 animals per month, at an average weight of 110 kilograms (242 pounds).

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

<u>Year 1</u>

Head Herdsman.....U.S.	$3,600
6 laborers @ $560 each.....	3,360
1 secretary-bookkeeper.....	1,600

Year 2

Head Herdsman's salary increases to .....U.S. $4,200
increase number of laborers to 10

Year 3

Head Herdsman's salary increases to $5,100
(Mexican manager assumes charge;
U.S. manager leaves)

increase number of laborers to maximum of 16

Year 4

Head Herdsman's salary increases to $6,600

f. 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.

g. 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.

APPENDIX II - D

ESTIMATED INVESTMENT AND OPERATING RESULTS CONSOLIDATED

(dollars rounded to nearest thousand)

YEAR	1	2	3	4	5	6
BUILDINGS[a]	35	262	44	44		
EQUIPMENT[b]	46	126	9	—		
SITE PREPARATION	—	10	—	—		
LIVESTOCK	—	77	320	40		
TOTAL PLANT AND EQUIPMENT	81	475	373	84		
ANNUAL OPERATING EXPENSES[c]	509	1 400	1 973	2 226	2 330	2 318
TOTAL CAPITAL REQUIRED	590	1 875	2 346	2 310	2 330	2 318
ESTIMATED OPERATING RESULTS						
SALES: Grain Division	490	1 260	1 532	1 532	1 532	1 532
Dairy Division	—	—	350	535	585	585
Swine Division	—	66	263	502	598	598
TOTAL SALES	490	1 326	2 145	2 569	2 715	2 715
Less operating expenses	509	1 400	1 973	2 226	2 330	2 318
Net operating earnings before taxes	(19)	(74)	172	343	385	397

a.- INCLUDES: Year 1 - One house for watchman (3)
Year 2 - Office building with three bedrooms (8)

b.- INCLUDES: Year 1 - Automobile for general manager (4)
Year 2 - Water system (10)
40 000 equip maintainance shop

c.- INCLUDES: Year 1 and thereafter - general manager (15)
Accounting service (2 year 1; 4 year 2 on)

Years 1 and 2 - Legal services (4)
Years 1, 2 and 3 - Management consultant (8)
Years 4, 5 management consultant (4)

ESTIMATED EARNINGS
(dollars rounded

YEAR	1	2	3	4	5	6	7
Revenue from Sales	490	1,326	2,145	2,569	2,715	2,715	2,715
EXPENSES							
Operating Expenses (a)	509	1,400	1,973	2,226	2,330	2,318	2,318
Less Net Inventory Increase	-	21	62	60	24	-	-
Net Operating Expenses	509	1,379	1,911	2,166	2,306	2,318	2,318
Depreciation (b)	17	51	54	57	57	57	57
Interest, Long Term Loan	4	30	40	40	38	36	33
Interest, Short Term Loan	-	2	7	12	12	10	5
TOTAL	530	1,462	2,012	2,275	2,413	2,421	2,413
OPERATING INCOME BEFORE TAXES	(40)	(136)	133	294	302	294	302
Less: Taxes, 42%, Less 40% (c)	-	-	-	63	76	74	76
NET OPERATING INCOME	(40)	(136)	133	231	226	220	226
Less 10% Employee Profit Sharing (d)	-	-	-	23	23	22	23
Less 5% Legal Reserve (e)	-	-	-	12	11	11	11
NET INCOME	(40)	(136)	133	196	192	187	192
As % of Equity	-	-	29%	43%	42%	41%	42%
PROPOSED DISTRIBUTION							
Payment to Farmers' Trust Fund (f)	-	-	-	30	29	39	40
Cash Dividend to Farmers (g)	-	-	-	8	10	11	14
Retained Earnings (h)	-	-	133	43	38	22	23
Cash Dividends to Investors	-	-	-	115	115	115	115
TOTAL	-	-	133	196	192	187	192
Investor Dividend as % of Equity	-	-	-	25%	25%	25%	25%
Accumulated Value of Trust Fund (f)	-	-	-	30	62	107	158
Accumulated Value of Legal Reserve (e)	-	-	-	12	24	38	52

APPENDIX II - E

CONSOLIDATED OPERATIONS
to nearest thousand)

8	9	10	11	12	13	14	15	16	17	18	19	20
2,715	2,715	2,715	2,715	2,715	2,715	2,715	2,715	2,715	2,715	2,715	2,715	2,715
2,318	2,318	2,318	2,318	2,318	2,318	2,318	2,318	2,318	2,318	2,318	2,318	2,318
-	-	-	-	-	-	-	-	-	-	-	-	-
2,318	2,318	2,318	2,318	2,318	2,318	2,318	2,318	2,318	2,318	2,318	2,318	2,318
57	57	57	57	57	57	57	57	57	57	57	57	57
31	29	27	25	25	25	25	25	25	25	25	25	25
-	-	-	-	-	-	-	-	-	-	-	-	-
2,406	2,404	2,402	2,400	2,100	2,100	2,100	2,400	2,400	2,100	2,100	2,400	2,400
309	311	313	315	315	315	315	315	315	315	315	315	315
78	79	79	79	79	79	79	79	79	79	79	79	79
231	232	234	236	236	236	236	236	236	236	236	236	236
23	23	23	24	24	24	24	24	24	24	24	24	24
12	12	12	12	1	-	-	-	-	-	-	-	-
196	197	199	200	211	212	212	212	212	212	212	212	212
43%	43%	43%	44%	46%	46%	46%	46%	46%	46%	46%	46%	46%
43	41	41	41	42	10	10	10	10	10	10	10	10
15	17	19	21	31	63	63	63	86	86	86	86	86
23	24	24	23	23	24	24	24	1	1	1	1	1
115	115	115	115	115	115	115	115	115	115	115	115	115
196	197	199	200	211	212	212	212	212	212	212	212	212
25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
217	279	318	124	509	63	80	98	118	139	163	190	219
70	89	109	132	147	161	177	195	215	236	260	286	314

ESTIMATED CASH
(dollars

YEAR	1	2	3	4	5	6
CASH IN						
Cash Forward	-	46	163	85	55	78
Net Operating Income	(40)	(136)	133	231	226	220
Equity Paid In (a)	100	360	-	-	-	-
Long Term Loans (b)	50	325	125	-	-	-
Short Term Loans (c)	-	13	45	42	-	-
Depreciation Accruals	17	51	54	57	57	57
Total Cash In	127	659	520	415	338	355
CASH OUT						
Inventory Increase	-	21	62	60	24	-
Plant, Equipment, Livestock	81	475	373	84	-	74
Repayment Long Term Loan	-	-	-	28	28	28
Repayment Short Term Loan	-	-	-	-	20	20
Profit Sharing With Employees	-	-	-	23	23	22
Legal Reserve	-	-	-	12	11	11
Payment to Farmers' Trust Fund	-	-	-	30	29	39
Cash Dividend to Farmers	-	-	-	8	10	11
Cash Dividend to Investors	-	-	-	115	115	115
Total Cash Out	81	496	435	360	260	320
CASH BALANCE AT YEAR END	46	163	85	55	78	35

APPENDIX II - F

FLOW CONSOLIDATED OPERATIONS
rounded to nearest thousand)

7	8	9	10	11	12	13	14	15	16	17	18	19	20
35	22	46	79	134	140	108	180	261	342	294	55	61	75
226	231	232	234	236	236	236	236	236	236	236	236	236	236
-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-
57	57	57	57	57	57	57	57	57	57	57	57	57	57
318	310	335	370	427	433	401	473	554	635	587	348	354	368
-	-	-	-	-	-	-	-	-	-	-	-	-	-
45	8	-	-	74	112	9	-	-	106	297	52	44	-
28	28	28	26	-	-	-	-	-	-	-	-	-	-
20	20	20	-	-	-	-	-	-	-	-	-	-	-
23	23	23	23	24	24	24	24	24	24	24	24	24	24
11	12	12	12	12	1	-	-	-	-	-	-	-	-
40	43	41	41	41	42	10	10	10	10	10	10	10	10
14	15	17	19	21	31	63	63	63	86	86	86	86	86
115	115	115	115	115	115	115	115	115	115	115	115	115	115
296	264	256	236	287	325	221	212	212	341	532	287	279	235
22	46	79	134	140	108	180	261	342	294	55	61	75	133

APPENDIX II

PROFORMA BALANCE SHEETS AT YEAR
(dollars rounded to

YEAR	1	2	3	4	5	6	7	8
ASSETS								
Cash	46	163	85	55	78	35	22	46
Cash, Legal Reserve	-	-	-	12	23	34	45	57
Inventories (a)	-	21	83	143	167	167	167	167
Total	46	184	168	210	268	236	234	270
Plant, Equipment, Livestock	81	556	929	1,013	1,013	1,013	1,013	1,013
Less Depreciation Allowance	17	68	122	179	236	219	231	280
Net	64	488	807	834	777	794	782	733
TOTAL ASSETS	110	672	975	1,044	1,045	1,030	1,016	1,003
LIABILITIES AND NET WORTH								
Short Term Debt	-	13	58	100	80	60	40	20
Long Term Debt	50	375	500	472	444	416	388	360
Total Debt	50	388	558	572	524	476	428	380
Legal Reserve	-	-	-	12	23	34	45	57
Share Capital, Paid In	100	460	460	460	460	460	460	460
Earned Surplus	(40)	(176)	(43)	-	38	60	83	106
Total Net Worth	60	284	417	460	498	520	543	566
TOTAL LIABILITIES AND NET WORTH	110	672	975	1,044	1,045	1,030	1,016	1,003

- G

ENDS CONSOLIDATED OPERATIONS
nearest thousand)

9	10	11	12	13	14	15	16	17	18	19	20
79	134	140	108	180	261	342	294	55	61	75	133
69	81	93	94	94	94	94	94	94	94	94	94
167	167	167	167	167	167	167	167	167	167	167	167
315	382	400	369	441	522	603	555	316	322	336	394
1,013	1,013	1,013	1,013	1,013	1,013	1,013	1,013	1,013	1,013	1,013	1,013
337	394	377	322	370	427	484	435	195	200	213	270
676	619	636	691	643	586	529	578	818	813	800	743
991	1,001	1,036	1,060	1,084	1,108	1,132	1,133	1,134	1,135	1,136	1,137
-	-	-	-	-	-	-	-	-	-	-	-
332	306	306	306	306	306	306	306	306	306	306	306
332	306	306	306	306	306	306	306	306	306	306	306
69	81	93	94	94	94	94	94	94	94	94	94
460	460	460	460	460	460	460	460	460	460	460	460
130	154	177	200	224	248	272	273	274	275	276	277
590	614	637	660	684	708	732	733	734	735	736	737
991	1,001	1,036	1,060	1,084	1,108	1,132	1,133	1,134	1,135	1,136	1,137

APPENDIX II - E

a. The annual operating expenses reflect a purchase price from the farmers of 800 pesos (U.S. $64) per ton for corn grain; the net operating income assumes a selling price by the Model of 900 pesos (U.S. $72) per ton. The cost of the practice and personal credit system (see notes, Appendix II - A) and the flow of money to and from the farmers are details which are subsumed by the buying price and staff expenses.

b. Mobile equipment, that is, tractors, pickup trucks and backpack sprayers are depreciated in 5 years. This excepts the feed delivery truck operating within the dairy corrals which is depreciated in 10 years along with all permanently placed equipment. Buildings are depreciated in 10 years. Straight line depreciation method of calculation is used.

c. The Model qualifies for this tax structure because it is an agricultural enterprise and more than 50% of its before tax revenue is derived from the sale of dairy products and swine. The buying and selling of corn grain is considered a commercial rather than an agricultural

activity. It is to be observed that agricultural enterprises are not included in the law among "new and necessary industries" which may qualify for a tax holiday over a certain period of time. In effect, however, the permanent reduction of 40% of normal tax yields better results in the long run.

d. 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.

e. 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 can not be paid out to investors. The reserve fund represents assurance to creditors of some payment on debts should there be default. There are many ways in which this reserve might be handled by management. As an example only, the legal reserve is shown as though each year both earned interest and new capital payments to the reserve are invested in no or low tax, government guaranteed paper, such as offered

by the National Investment Corporation (Financiera Nacional). It is assumed that an average 10% annual interest will be paid by such institutions on all deposits. By this means, funds are generated which may be used for new investment in the Model; to speed up amortization of the equity; to provide a measure of internal insurance against the hazards of a bad season; to extend more cash benefits to the farmers; the sole arbiter of what is done with such earnings. Finally, it may be noted that even as with the Farmers' Trust Fund, the investment of the legal reserve fund in the nonagricultural sector of the Mexican economy brings about three additional benefits:

- it educates the farmers to the nature and value of long term savings and investment;

- it encourages the farmers to continue such use of their assets when they own and operate the Model, thus both extending their earnings <u>and</u> spreading their investment risk throughout the national economy; and,

- it accelerates the integration of agricultural and industrial activity in the nation for mutual growth.

f. Several observations about the Farmers' Trust Fund are important:

i. Based on legal opinion, the payments to the Trust are <u>not</u> considered subject to the normal 5% dividend tax.

ii. As with the legal reserve fund, it is assumed that the Trust Fund will yield 10% annual interest and that all interest will be retained in invested form along with new capital additions until the Fund is large enough to accomplish its ends, namely, to purchase the Model for the farmers from the investors.

iii. Payments to the Trust as shown in a quantity which permits the original investor equity of U.S. $460,000 (pesos 5,750,00) to be fully recovered by the end of the 12th year. This payment, which it is calculated will be made in a lump sum at that time, is completely independent of annual dividends paid to investors.

iv. Payments to the Trust Fund from Year 13 through Year 20, in lesser amounts than before, are of a size, which, with interest, accumulate to slightly over U.S. $194,000. This equals that part of the long term debt which has been liquidated during the period of

management control by the investors and thus constitutes an addition to the value of the original equity. At the end of Year 20 and before full ownership and control passes to the farmers, this sum is also distributed to the investors. At this point in time, the Trust ceases to function.

g. The cash dividend paid to farmers is also assumed <u>not</u> subject to the 5% dividend tax. It is shown as being started at the end of the fourth year, simultaneously with the first payment to the Trust Fund. Since the payment to the Trust Fund symbolizes the beginning by the farmers of their purchase of the entire corporation, it seems wise to pay a cash dividend this same year to help drive home the meaning of stock ownership and to assist in educating the farmers to the value of what is being created for them. This annual cash dividend is increased steadily and rises sharply as the years progress, as follows:

Cash Dividend Per Farmer
(560 Farmer Shareholders)

Year 4	U.S. $16	202 pesos
5	18	223
6	20	246
7	25	313
8	27	336
9	30	380
10	34	425
11	38	470
12	55	693
13	113	1407
14	113	1407
15	113	1407
16	154	1920
17	154	1920
18	154	1920
19	154	1920
20	154	1920
21	380	4745

h. Whether or not the retained earnings shown will be set aside for new investment or any other purpose will depend upon management's decision at the time. The retention of earnings in this amount is shown to indicate the possibility of creating this fund and still allow a 25% return on equity in the form of a cash dividend, starting Year 4 of operations. Further, since the establishment of this reserve is a moot question, no attempt is made to indicate what might be earned by reinvesting the capital and interest as is done with the legal reserve and Trust Funds.

APPENDIX II - F

a. 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 succesfully 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 (note C) 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:

i. 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.

ii. 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 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.

iii. 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 the more widespread is the possibility of applying to the Model to diverse types of agricultural development situations.

b. The long term loan is planned at U.S. $500,000. Equipment and livestock with an estimated at-cost value of U.S. $631,000 will be offered as collateral. The loan will reach U.S. $500,000 at the end of Year 3, at which time equipment and livestock valued at $591,000 will be on site; when the loan reaches its peak at the beginning of Year 4, the remaining livestock will have been purchased. Since a payment on the loan is planned at the end of Year 4, in the amount of U.S. $28,000 , the actual ratio of assets to loan at the end of the fourth year will be 631 to 472 or 1.34 to 1.00. This assumes that the assets include the depreciation reserves.

Note that the collateral to be offered does <u>not</u> include the value of the buildings. These buildings will be placed on community land and will have no value for resale or reuse by creditors. Further, in their construction, it is intended to maximize the use of low cost local materials, such as stone and brick. Because of this, there would be little salvage value in the buildings. For these reasons, the U.S. $372,000 to be invested in buildings is not considered as backing for loan negotiations.

The intent is to finance the loan through private banks at an interest rate not to exceed 8% per year. This may require participation by financial institutions in the United States and favorable interest has been expressed in such action. However, first priority will be given to obtaining the long term loan from private banks in Mexico, in such a way that the lending bank can gain project approval from the Banco de Mexico, Fondo de Garantía y Fomento para la Agricultura y Ganadoria. This will accomplish three things simultaneously: the bank is motivated to make the loan; interest as low as 7% per year is made possible; and, if the Fondo de Garantía participates in this way, the importation of nonregistered dairy animals is greatly facilitated. While it has not been possible to enter into firm negotiations in Mexico to secure such a loan, preliminary discussions have been held with all of the leading private banks, with officials of the Banco de Mexico and with officials of the Fondo de Garantía y Fomento, with very encouraging results.

c. The collateral for short term loans will be the inventory of animal feeds held in the warehouses of the dairy and swine divisions. At any one time, there will be an average of three months supply of feed (note that corn silage is <u>not</u> included). Based on discussions with local banks, the loan level is taken at 70% of market value.

d. The schedules for depreciation are those which legal counsel advises are wholly acceptable under Mexican conditions. Experience alone will determine the need for actual replacement at the times indicated, although it may be predicted safely that the tractors and pickup trucks will require replacement on the schedule shown.

APPENDIX III

LEGAL AND OPERATING STRUCTURE

1. Careful legal research, directed by Mexican counsel (Baker, Botts, Miranda, Santamarina and Steta, Mexico, D.F.) indicates no constitutional or legal barriers to the establishment of the Model. On the other hand, it must be noted that the Model is a novel type of organization and will involve innovation in working out the final details of organizational relationships between the corporation and the farmers, particularly as the latter are ejidatarios or members of ejido communities whose farm land and homestead are not owned but are rather made available for essentially permanent use, with certain restrictions, e.g., the land cannot be sold or mortgaged; it cannot be rented; among others. On the other hand, each farmer-ejidatario is free to produce and sell at his own discretion and may borrow money where and how he sees fit.

2. Within these frames of reference, an initial general description of the basic legal and operating structure, as designed by legal counsel, follows. Details will be worked out in the months ahead.

I- Corporation

a. A Mexican corporation of variable capital (the Corporation) will be formed, with domicile at Guadalajara, Jalisco, a duration of one hundred years, and a purpose clause sufficiently broad to permit the basic activities of rendering technical services to farmers ("ejidatarios" and "pequeños propietarios"), buying and selling crops, lending money for agricultural purposes, conducting direct operation of a dairy farm and swine operation, and related activities, including the acquisition of real and personal property necessary for its operation and the possibility of forming or participating in other commercial or industrial companies. The Corporation will not be allowed to engage in direct agriculture nor to own or possess land for agricultural purposes.

b. The Corporation will have a variable capital. The minimum fixed capital will be subscribed and paid by the investors, who may be Mexican or foreign individuals or companies or both, and will be represented by common registered shares with voting rights. The variable capital will be formed by: (a), common registered shares with voting rights, that will be subscribed and paid by the investors, as necessary, to bring in the original capital and any additional capital that may be required above the original investment; and, (b), by registered preferred shares, with limited voting rights, which may only be subscribed and owned by individual farmers of the valley. The total number of preferred shares and their par value shall be about the same as the total number and par value of the common shares of the minimum fixed and variable capital of the Corporation.

c. The common shares representing the minimum fixed capital will be subscribed and paid upon incorporation of the Corporation. The common and preferred shares that will represent the variable capital will be kept in the treasury to be subscribed and paid in accordance with the resolution of the Board of Directors or the Stockholders Assembly of the Corporation. All common shares will be subject to amortization not later than twenty years after their issuance, through payment to their holders of the face value of the shares plus a proportional amount of the capital reserves of the Corporation as of the amortization date.

d. The preferred shares will be non-voting; will be entitled to a minimum fixed cumulative dividend starting from their subscription and in proportion to the face value of the shares paid by their holders; will be convertible into common shares with voting rights not later than twenty years after their issuance.(at which time the common shares will be amortized): may be paid in installments that may not be lower than the annual dividend corresponding to said shares; shall be held in trust by a banking institution until their conversion into common shares; and may appoint one or two representatives to attend stockholders assemblies and Board of Directors meetings, with voice but without vote.

e. The administration of the Corporation will be entrusted to a Board of Directors designated annually by the Stockholders

Assembly. The direct administration will be entrusted to a General Manager who will have agronomists, veterinarians, secretaries, and personnel required to render the technical assistance to the farmers and to operate the dairy and swine facilities.

f. The by-laws of the Corporation will follow the general provisions of the Mexican Law of Business Organizations providing for an annual ordinary stockholders assembly to resolve upon the annual balance sheet, appoint Directors and Inspectors, establish their remunerations, and resolve on the appropriation of profits.

g. The by-laws of the Corporation will provide that beginning at sometime during the first five years of its existence, from the net profits that may be distributed among the stockholders as dividends (after corporate taxes, profit sharing to employees and workers and after setting aside the 5% mandatory legal reserve until it reaches 20% of the capital stock), a certain sum will be devoted each year to creat a fund destined to allow the farmers of the valley to buy the preferred shares giving them the initial partial payment of the par value of the shares. This fund will be delivered in trust to a banking institution which will invest it and will look after the subscription of the preferred shares by the farmers in due time.

h. Immediately after incorporation, the stockholders will pass a resolution that the preferred shares shall be kept in the treasury in order to be offered for subscription and payment to the farmers of the valley, not before three years but not later than five years from incorporation; that the shares shall be offered to the farmers in proportion to the tonnage of the crops that they may have sold to the Corporation during said three to five years; that the first payment on the price of the shares will be the equivalent of the amount under the Trust Fund made with the part of the profits of the Corporation assigned for such purposes; and that the balance of the price will be payable by the farmers with funds placed in said Trust.

II - Contracts with the Farmers

i. The Corporation will execute contracts with the farmers of the valley under which the Corporation will agree to give them technical assistance and the seeds, fertilizers, herbicides, pesticides and implements that they may require, and will buy the crop at a given price; and the farmers will agree to work their land in accordance with the instructions of the Corporation, and to deliver the crop to the latter, which will deduct from the price the amounts of the seed, etc., advanced by the company, plus interest on the cash value of this credit. These contracts may guarantee the farmer a minimum crop per hectare under the technical assistance of the Corporation.

III - Trust Contract

j. A trust contract will be entered with a Mexican fiduciary institution under which the Corporation will agree to deliver in trust the percentage of the profits of the Corporation established in the by-laws of the latter in order that the trustee invests the fund and in due course uses it to finance the acquisition of the preferred shares of the Corporation by the farmers. This contract will allow the Corporation to determine the time and conditions for subscription of the preferred shares; will provide that after subscription the shares will be kept in trust until the preferred shares are converted into common shares, and will have the other necessary provisions to have the trustees appoint two of the farmers to attend Board Meetings and Stockholders Assemblies, collect dividends to appropriate them to the payment of the unpaid balance of the shares, and related matters.

IV - Contract Between the Corporation and the Farmers for Subscription of the Preferred Shares

k. A contract will be entered between the Company, the farmers and the trustee (fiduciary institution), to cover the sale of the preferred shares to the farmer, provide the terms and conditions of payment thereof, and the other general provisions such as the farmer's

agreement to keep the shares in trust with the trustee until their conversion into common shares, instructions to the trustee to sell the shares in case of death of the farmer, etc.

V - Other Contracts

l. The Corporation will enter labor contracts with the personnel that will work for it permanently or temporarily for specific jobs. Some personnel will be technicians, but part will be local farmers who will be hired by the Corporation. These contracts will fulfill the requirements of the general Labor Laws of the country.

m. Under the above pattern, the Corporation will be formed by the investors with no direct participation of the farmers who, nevertheless, will have a participation in the profits through the establishment of the Trust Fund. The Corporation will be run by the investors until the common shares are amortized. However, when the preferred shares are subscribed by the farmers, they will begin to participate in the administration with voice but without vote. The holders of the common shares may agree that the farmers may receive a certain amount of dividends corresponding to their preferred shares, even though the major part thereof is used to pay the balance of their par value, as an incentive to the farmers.

APPENDIX IV

MARKET ANALYSIS

CORN GRAIN

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.

2. All grain will be sold immediately upon reaching a moisture content of 14% based on dry weight. At this 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 unequivocably that they would give preference to grain delivered by the Model if quality control were exercised over moisture content.

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	
Market Year	Industry Demand	Miller Demand
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 1969, 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 75,000 tons. In addition, new storage facilities being built 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 1969. The marketing picture, from the time the Model first starts selling corn, may be illustrated as follows:

Marketing Period	Market Demand	Model Sells	% of Current Demand
1969-70	90,000	6,800	8%
1970-71	99,000	17,500	17%
1971-72	108,000	21,280	20%
1972-73	119,000	21,280	18%
1973-74	138,000	21,280	16%
1974-75	152,000	21,280	14%

In calculating earnings and cash flow (see Appendix II-E and F), 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, and again in 1967, the price structure for corn was this:

Month	Average Price Paid Per Metric Ton in Pesos	
	Industry	Millers
October	935	960
November	900	930
December	900	940
January.....	910	940

4. Every export 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 (Compania 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.

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.

Corn Grain Production - Thousand Metric Tons [a]

	1961	1962	1963	1964	1965	1966 [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: Almacenos Nacional de Deposito, S.A., Informe Anual a La Asombloa de Accionistas for 1964-65, published in 1966.

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

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.

7. The implications of the data shown in the Table above 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 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.

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 taken by the investors.

9. 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.

MILK

10. 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.

11. 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 Torreon, 700 kilometers distant, by the pasteurizers serving the Guadalajara market.

12. 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)

Year	Total Demand	Total Supply	% Margin
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	1008.8	1012.6	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%

13. 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.

14. 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.

15. 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 herds of Model, 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 <u>all year long</u>.

16. 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 average of 17,000 liters a day in 1963 to almost 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 Mecanizado Jalisco (a government company) - installed capacity is 44,000 liters/day for pasteurization, homogenization, deodorizing, and packaging in cartons; current production is 6,000 liters/day, or 16% of capacity.

- La Pureza, S.A. - installed capacity is 35,000 liters/day for pasteurizing, deodorizing, and bottling; current production is 30,000 liters/day, or 86% of capacity.

17. Despite their diffficulties 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.

18. In addition to the sale of milk, the Dairy Division of the Model plans to market some animals as a source of meat. Holstein cows, properly fed, produce an excellent quality meat. When the dairy is in full production, it is estimated that 100 head will become available for sale as cull cows, per year (cows which are not producing at a sufficiently

PROJECTED DEMAND FOR

YEAR	POPULATION[a] (1)	PER CAPITA USE STABLE GROWTH LITERS[b] (2)	PER CAPITA USE 3% GROWTH/YR LITERS[b] (3)	TOTAL DEMAND (1) X (2) MILLION LITERS[b] (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

FLUID MILK IN GUADALAJARA AREA 1967-1975

TOTAL DEMAND (1) X (3) MILLION LITERS[b] (5)	DAILY DEMAND $\frac{(4)}{365}$ THOUSAND LITERS[b] (6)	DAILY DEMAND $\frac{(5)}{365}$ THOUSAND LITERS[b] (7)	DAILY DEMAND PASTEURIZED MILK AT 2 GROWTH RATES THOUSAND LITERS 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

high level). Too, recent research at the University of Arizona and at other research centers in the United States has shown that Holstein steer calves are very efficient at converting feed to beef. These calves can be brought to approximately 500 kilograms (1100 pounds) in eleven months' time at a cost of one peso per pound of gain where concentrate costs are those used by the Model (750 pesos or U.S. $60 per ton).

At the present price of 5.5 pesos per kilogram (U.S. 20¢ per pound) a net profit of approximately 1,250 pesos (U.S. $100) per steer can be made over feed and labor costs. While the market for top quality beef is small, it is growing in Guadalajara. It is anticipated that the Dairy Division will sell 100 cull cows and 400 fattened steers per year with no difficulty, for a gross income of 1,250,000 pesos (U.S. $100,000).

19. Finally, it is reasonable to assume that there will be a good strong market for surplus dairy heifers and cows from the Model. The dairy will be among the finest in Mexico. In purchasing animals in the United States for the Model, 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. After the third year of operation, it is expected that no less than

100 such animals will be sold each year, with a gross income to the operation of 625,000 pesos (U.S. $50,000).

SWINE

20. 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 corporation. 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.

21. 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 (Exhibit J).

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.[a] 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.

22. 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

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a. Banco Nacional de Mexico S.A., Secretaria de Agricultura y Ganaderia, Secretaria de Hacienda y Credito Publico, "Projections of Supply and Demand for Agricultural Products 1965, 1970, 1975." Mexico D.F. 1966

EXHIBIT I

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

	THOUSANDS OF METRIC TONS			
	1959-61	1965	1970	1975
Domestic demand	158	219	294	388
Available Supply	158	195	235	275
Surplus or (Deficit)	-	(24)	(59)	(113)
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 47.88 (Average 1959-61) to 47.78 (1965) and on to 49.71 (1970) and 50.20 (1975)

Source: Bank of Mexico

the Banco de Mexico study, unless feed costs are lowered sharply and management practices are improved. Exibit II 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.

23. 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 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.

24. 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 (Exhibit III). Most large producers establish a price reporting system with one or two brokers in Mexico City.

EXHIBIT II

FORECAST OF PORK MEAT SUPPLY - MEXICO CITY AND GUADALAJARA

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

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

EXHIBIT III

INCREMENTAL MARKETING COSTS FOR SELLING IN MEXICO CITY

		Pesos
1.	Transport, based on 25 animals per truck, and one man to care for animals.....	16.50 per animal
2.	Unloading.....	1.80 " "
3.	Change of ownership	.10 " "
4.	Taxes	3.25 " "
5.	Weight and death loss, based on 0.75 kg. per animal weight loss and ½% death loss.....	8.18 " "
	Total.....	29.83 per 110 kg. animal or .27 - .30 per kg. (U.S. 2.2 cents/kg.)

25. 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 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. Exhibit IV 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. Exhibit V is a schedule of cash returns from the marketing of hogs by the Model from the beginning of operations, until the 31st month, when stability is reached.

26. 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

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

		MEXICO CITY [1]	GUADALAJARA [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
Average		U.S. 5.30/5.06 ¢	U.S. 5.04 ¢

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

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

EXHIBIT V

CASH RETURN - SWINE SALES

Sale Weight - 110 kg. (242 lbs)
Sale Price - 6.3 pesos per kilogram (U.S. $22.91 cwt)

Month From Startup	Animals Sold		Sales Revenue (pesos)
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. $17,749)
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)

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.

27. 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 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.

28. 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.

APPENDIX V

CULTURAL AND SOCIAL BACKGROUND

1. The success of the Model is, in a critical way, dependent upon gaining the confidence and cooperation of the farming community. Until The Model is a legal entity, completely financed, however, no final test can be made to determine whether these relationships can be established and in what period of time. When the farmers are ultimately approached by representatives of the Model, every incentive must be concrete and every promise capable of being met, particularly those related to credit, supervision, increased yields, storage of grain for household consumption, actual construction of the dairy and swine facilities, on-site employment, among others. One of the most dangerous pitfalls to be avoided in establishing effective working relationships with rural people is talk in the abstract, combined with long delays between the initial description of change and the actual entry of the change agent.

2. At the time this "Tentative Investment Prospectus" is being written, after over one year of careful study and field work, the farmers do <u>not</u> know of the Model in all of its complexities and in its implications for a dramatic change in their lives. On the other hand, close and widespread contacts have been established throughout the four ejidos involved, using two distinct methods of approach:

a. As noted in Appendix VI, actual production trials were conducted in the valley, validating the improved practice of growing corn for the purposes of the feasibility study and to demonstrate the ability of the study group to achieve high production. The land was obtained through the voluntary cooperation of the farmers. Each was assured that the practice would cost nothing but his labor; too, each was advised that the harvest was his after it had been checked and weighed. The offers to use land were many, immediate and enthusiastic. The information given to the communities was only that a nongovernmental group of Mexicans and U.S. Americans was studying the means of increasing production in the valley and that the results of the study would be passed on to all the farmers. The 1967 experimental results are, indeed, now being transmitted to each community by means of public meetings called by the local leaders. It is important to note that plans for 1968 production studies of corn and sorghum will increase the test area by 1,000%, involving many more cooperators, under the same terms. It is clear that all the land needed will be volunteered. The interest in what is being done is high and intense.

b. 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, now resident in Mexico and with over fifteen years of experience in the country, who, in turn,

worked with 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 questionaires 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 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 origen of practices and attitudes

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

The sample covered over two hundred interviews of many hours duration, carried out over a series of visits, in the following proportions:

Occupation	Sample	Statistical Source
Ejidatarios	17%	census
Private Owners	11%	census
Share Croppers	9%	census
Day Laborers	9%	approximately - calculation
Merchants	11%	census
Others	9%	approximately - calculation

In addition to the random sample, which touched all members of the family, formal leaders (ejido and municipal) within each village were also interviewed, as were natural leaders selected by means of sociograms.

3. A vast amount of data have been obtained and are being carefully analyzed. What is important to this "Tentative Investment Prospectus" is that every indicator so far evaluated points to the conclusion that the people in the valley:

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

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

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

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

- net financial return above their debt and getting out of debt;
- community development as an outlet for their pride; and,
- greater opportunity for their children.

4. It is planned to issue a separate comprehensive report covering this cultural, social and economic study. At this time, it seems safe to say that with a careful approach, the Model should gain rapid acceptance. This is not to say that resistance will be lacking, as, for example, the objections which predictably will be voiced by the local money lenders. Still, nothing learned to date leads to anything but optimism that the Model can reach its operational goal of bringing 4,500 hectares and 90% of the farmers in the valley under management in three years. Of special interest, the study has revealed a very

low criminality record and, of great importance, a fine record of credit repayment. An auxilliary study of the credit history in the valley is in process of completion and will be included in the general report on the cultural and social background of the people in Huejotitan, Zapotitan, El Molino and San Marcos. To further substantiate the credit worthiness of the Mexican ejidatario, cases taken from other parts of Jalisco and Mexico in general are being gathered. These data, too, will be available in the near future to support the presentation for credit financing.

APPENDIX VI

GRAIN PRODUCTION EXPERIMENTS

1. The original research on increasing the yield of corn grain, upon which the entire structure and the location of the Model depended, was done by the Mexican Ministry of Agriculture and Livestock, in cooperation with the Mexican Agricultural Program of the Rockefeller Foundation. The work, based on the controlled use of improved seed, fertilizer and pest control, predicted that in areas where the rainfall exceeded 700 millimeters per year (roughly 28 inches), reasonably good soils should yield upwards of 4 tons per hectare.

2. With this rainfall requirement as a limiting factor in site selection, an area to the south and slightly west of Guadalajara was studied for site possibilities. When rainfall was integrated to other factors such as the quality, area and disposition of the land; ease of transportation; available power and fuel; the needs of the people and the history of change among them, the site as recommended was chosen.

3. Two plots were selected for productivity tests, one in each of the predominant soil types. One plot was located on the lower slopes of the valley, in Huejotitan; the other lay in the flat central area of the valley, in Zapotitan.

4. At each test site, slightly over 2 hectares were utilized. One measured hectare in both places was cultivated as a "commercial" plot, utilizing a practice which seemed to integrate most effectively the work done by the Mexican Department of Agriculture and the Rockefeller Foundation, the experience of the best farmers in the area, recommendations of the National Seed Company, and the expertise extended by specialists in the Jalisco branches of the various agencies of government concerned with agricultural development, e.g., Plan Lerma, Banco Ejidal, Banco Agrícola, Banco Agropecuario, Ministry of Agriculture and Livestock, among others. As well, guidance was solicited among private companies in the agricultural chemical field as to the most effective use of pest control materials.

Results: At Huejotitan - 4,995 Kg. corrected to 14% moisture
At Zapotitan - 4,867 Kg. corrected to 14% moisture

These results were obtained without the use of chemical herbicides. Total cost of production at each site, including all labor except that supplied by the farmers whose lands were involved, was 2,000 pesos (U.S. $160) per hectare.

5. The fertilizer application on the "commercial" plots was by formula 160 (Nitrogen) - 70 (phosphorous) - 0 (potassium). To further

test the validity of this formula, 15 variations of fertilizer were applied to small test plots in a statistically designed experiment, using the same hybrids as on the "commercial" plots (H-220 in Zapotitan; H-309 in Huejotitan). While these data are currently under mathematical analysis, several indications are clear. Less nitrogen and less phosphorous are required than used in 1967 on the commercial plots, with an anticipated reduction in practice cost. Further, in five plots in Zapotitan and in an equal number in Huejotitan, yields in excess of 6,000 Kg. per hectare were obtained; yields slightly under 6,000 Kg. were obtained on an equal number of additional plots.

6. Combining the "commercial" results with the studies of fertilizer formula, it seems rational to anticipate an average yield of 5 tons/hectare. No attempt is made to calculate farmer or Model income based on a projection of even higher yields. It is anticipated that highest yields will result in a few years but no indisputable data are available. The average yield now obtained in the valley is 1.5 - 1.7 tons, with a high range of variability as reported to the interviewers conducting the cultural-social-economic study (see Appendix V). A few farmers reported yields as high as 3.5 tons; most farmers do not use improved practices and yields as low as 1.2 tons were more commonly indicated.

7. While the area tested in 1967 was small, it was deemed adequate by scientists consulting on the project for a projection of yields throughout the valley. However, during 1968, from 30 to 50 hectares

will be placed under management in order to widen the base for production calculations. Several promising new hybrids will be tested. H-309, the most widely recommended hybrid for the temporal conditions characteristic of the valley will form the control in all cases. Chemical herbicides will be extensively tested to determine cost-benefit relationships. Comparisons will be made of the cost-benefit relationships existing between tractor and animal drawn tools in land preparation. A determination will be made as to the possibility of lowering the cost of fertilizer by adding less nitrogen and phosphorous. A wider cross-section of the soil types in the valley will be checked for management requirements, in anticipation of the Model entering the scene in 1969.

8. Several private seed companies have expressed interest in including productivity tests of improved varieties of sorghum. Based on work already done elsewhere, the suggestion is that high yielding sorgums might return an even greater income per hectare than will 5 ton/hectare corn grain yields. With the cooperation of at least two of these companies, sorghum trials will be made in 1968 on several hectares scattered throughout the valley.

9. The Dairy Division of the Model will buy corn for silage within the Valley. To determine yield and hence cost data, since no information pre-existed on these points, a plot of one-half hectare was included in 1967, at Zapotitan, to obtain figures. This test indicated

a yield of good grade of green silage of approximately 40 tons per hectare. In a nearby valley, where, at the time, productivity tests were also being made, a silage plot yielded almost 50 tons per hectare of equally good green silage ("good" silage: this description is based on a laboratory analysis to determine protein and crude fiber content and a response to these data by Dr. Gerald Stott, Head, Dairy Science Department, University of Arizona and consultant to the study on the feasibility of the Model). A 45 ton yield was used in calculating silage cost delivered at the Dairy Division silos. It was assumed that the return to the farmer per hectare for producing silage must equal the return from a 5 ton yield of grain. At 88 pesos/ton (U.S. $7.00, roughly), this is the result.

10. To further refine silage costs, tests of silage yields on from 5 to 10 hectares will be made in 1968. These plots will be scattered in an area of 400 hectares adjacent to the proposed dairy site from which it is intended to draw silage in the Model system.

11. Finally it is to be noted that the farming practices the Model intends to introduce require at the outset a minimum of mechanization

and displacement of labor. Indeed, as knowledge develops as to how to utilize the land throughout the year, it is hoped to increase labor demand in the early years of operation. It is vital to effective rural development that the displacement of human labor by machines be accompanied by alternative uses of the people replaced; if this is not possible in the most ideal sense, that is, total reemployment, then it must be that as the people are replaced by machines they become owners of these machines and retain the wealth created.

APPENDIX VII

OPPORTUNITIES AND PROBLEMS

OPPORTUNITIES

The feasibility of the Model is predicted entirely on the basis of increased corn grain production and the integration of milk and hog operations to the farming system.

During the course of the study in Jalisco, which began in November, 1966, a variety of opportunities to diversify the operations of the Model in additional profitable ways have come into view. These have been noted as guidelines to the research and development activities of the Model, for the earliest possible attention. These opportunities include:

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. Clearly, 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 exclusively in animal feed.

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 response of several geologists and water engineers taken to the site was enthusiastic. The valley is surfounded by mountains and although the area under cultivation is small, the area drained into the valley is very large. One evidence of the amount of water running 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.

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 profitable 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 (see Appendix V), 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 take more profit-added to the raw milk before sale. 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 areas in the valley, not suited to high production agriculture, which might be developed to house corral-fed animals. Many people in Guadalajara have suggested such an operation. No work has been done to corroborate or deny this opportunity. It nonetheless exists as an intriguing idea in the face of a growing regional and national demand - and shortage - for good quality beef.

> Note: The market for poultry in Guadalajara does not, at the moment, seem to provide an opportunity in the near future. This does not eliminate poultry as a possibility, but it is felt to be of less immediate interest to the Model than the other opportunities mentioned above.

PROBLEMS

The four problems of importance which cannot, in truth, be resolved before the Model actually exists as a corporate, legal entity, are these:

First, the financial incentives which form the heart of the incentive system to be used initially to gain cooperation among the farmers, simply can not be tested. It is not of value to talk about them unless they can be implemented. Thus, no absolute assurance can be given that the

farmers will cooperate. While every indication exists that they will, the risk is there and is inherent in such a project, anywhere in the world.

Second, the land needed for the dairy, pork and grain facilities must be made available through a complex organization dealing with ejido affairs. This organization moves from the top of the Federal Government; down through the Agrarian Department (Departamento Asuntos Agrários y Colonización) which administers and arbitrates ejidal affairs at the national level; then to the State League of Agrarian Communities (Liga de Communidades Agrárias y Sindicatos Campesinos del Estado de Jalisco); and finally to the ejidal community organization itself. Tentative explorations indicate cooperation at every level. The moment is right for initiating new approaches to rural development. There is a great preoccupation in federal and state governments to speed up rural economic growth and to use every public and private resource possible. Still, the land has not been allocated and a formal approach to the proper agencies can not be made until the Model can move once a favorable decision is granted.

Third, the approval of the Fondo de Garantía y Fomento para la Agricultura y Ganaderia, Bank of Mexico, of a long term loan extended to the Model by a private bank, must remain a matter of opinion until such a loan is actually applied for and acted upon. This approval is particularly important, as has been said, to the importation of nonregistered dairy cows and the related lowering of investment. As well, this procedure may cut the interest rate on the loan to 7%, provided that the funds for discounting originate with the U.S. Agency for International Development. Again, while all contacts made to date reveal great interest and the intent to look favorably upon the Model, the matter can not be concluded until the Model exists and the loan application is in process.

Fourth, the short term loans for use in making credit as described available, are not at this time assured. As with all of the other aspects of financing the Model, tentative response by financial institutions and other sources of funds and guarantees has been favorable and a diversity of opportunity exists to secure these funds.

These problems are mentioned only to clarify the exact state of the Model as this "Tentative Investment Prospectus" is written. They are regarded as resolvable. They are not taken lightly but they are approached with reasoned optimism. It is believed that immediately after the first equity capital has been committed and the basic financing of the Model is assured, firm and positive decisions can be obtained covering the land required, the long term loan and the credit system loan.

APPENDIX VIII

HISTORY OF THE MODEL

1. The origin of the Model lies in a study which began in March, 1964, of the state of food production and food distribution in Africa, Asia and Latin America.

2. The study, sponsored by the International Minerals and Chemical Corporation of Skokie, Illinois, U.S.A., was aimed at finding new and better ways by means of which private enterprise, limited as it must be to operate for a profit, could do more to speed rural development, accelerate the production of more and more varied food supplies, and, as well, facilitate the movement of surpluses to the marketplace.

3. Out of this study came the conviction that unless the nations of the world can concentrate a vast amount of capital investment and management service on the land operated by the millions of small-scale farmers who dominate land use in the less developed areas, hunger and poverty will become ever more widespread. These are the people whose low level of production and endless state of depression form the critical bottleneck between the knowledge about how to do better and the application of this knowledge. These are the people who are at the

center of all agrarian revolutions; it is social justice for them that gives meaning and direction to the quest for social justice everywhere. Their frustration is the frustration of their countries; their loss of faith in the existing order is the substratum on which political violence flourishes.

4. To feed the poor is not enough. In the search for a solution to the world hunger crisis, there is no practical short term alternative to relieving the crisis except to increase sharply and quickly both local food production and the income retained by the farm family from the sale of surpluses.

5. Looking at this goal through the eyes of private investors, several facts affecting action come clearly into view.

a. The capital and management requirements of the small-scale farmers of the world are overwhelmingly large, amounting to billions of dollars every year for as long into the future as one can see.

b. Capital and management controlled by the private sectors of those countries which conceivably might release these resources, in part, to the development of food supplies and rural economies elsewhere, are themselves scarce resources. Money and men simply are not available in the quantity and quality needed.

c. Private investment in world agriculture, therefore, must be highly selective. It cannot be expected to be all things to all men. It must isolate from among the millions of small-scale farmers and their hundreds of millions of hectares of land, those whose current situation holds out the promise of large and rapid increases in productivity. The investor must be able to envision a fair return on his risk capital and his human effort. At the same time, he must be able to foresee a major impact on the amount of food locally available, on the quality and price of this food, and, finally, on the income of the farmers involved. Private investors, in other words, must seek out the places where public investment has already created an environment where private commercialization of agriculture can flourish. This may well eliminate the majority of the world's people who are in need. However, those who remain to be helped are large enough in number to occupy fully all of the private resources one can imagine will be voluntarily invested in world agriculture for many years to come.

d. Even when such limits on private investment are recognized and accepted, the fact remains that the entry of this type of investment into the rural areas of Africa, Asia and Latin America poses a sensitive political issue. Much of the capital and management required must come from other sources than the farmers themselves. Often these will be foreign sources. This is a basic fact that no rhetoric can change. 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?

e. 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, new kinds of institutional form for such investment must be created. No matter how pressing the problem of hunger, large amounts of private capital coming from others than farmers, often from foreign sources, destined for use of the land, at 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 helped to be achieved.

4. From this view of the problem, the concept of the Model emerged. To help in its design and to provide the necessary funds to study its feasibility, the International Marketing Institute of Cambridge, Massachusetts, U.S.A., a nonprofit research and educational institution, joined in a contractural relationship with the U.S. Agency for International Development. The field study in Mexico began November 1, 1966. To add technical strength to the study in Mexico and to help maintain worldwide interest in its progress, close relationships were established with the

International Crop Improvement Center for Corn and Wheat (CIMMYT - Centro Internacioanl para Mejoramiento de Maiz y Trogo), with headquarters in Mexico City.

The Model is intended as a prototype, to be applied widely throughout the world under many different conditions of crop production, social and political organization, cultural background and economic pressure. Mexico was selected as the site because of its leadership in agrarian reform...because it is politically and financially stable and strong... and, because in Mexico can be found one of the world's most impressive demonstrations of interaction between public and private enterprise. Yet, with all of these advantages, the problems of large segments of the rural populations are precisely the same as those met throughout Latin America, Asia and Africa.

It was felt that if the Model was accepted and succeeded in Mexico, it would facilitate greatly its acceptance and success elsewhere, under more difficult circumstances. In this sense, while corn is the basic crop upon which the Model is built, every basic food crop is of equal concern; while ejidatarios in this case are the farmers involved, all farmers in every land tenure system are involved. While the Model is a particular corporation in Mexico, it is, in reality, a universal symbol.

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Guadalajara, Jalisco, Mexico
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