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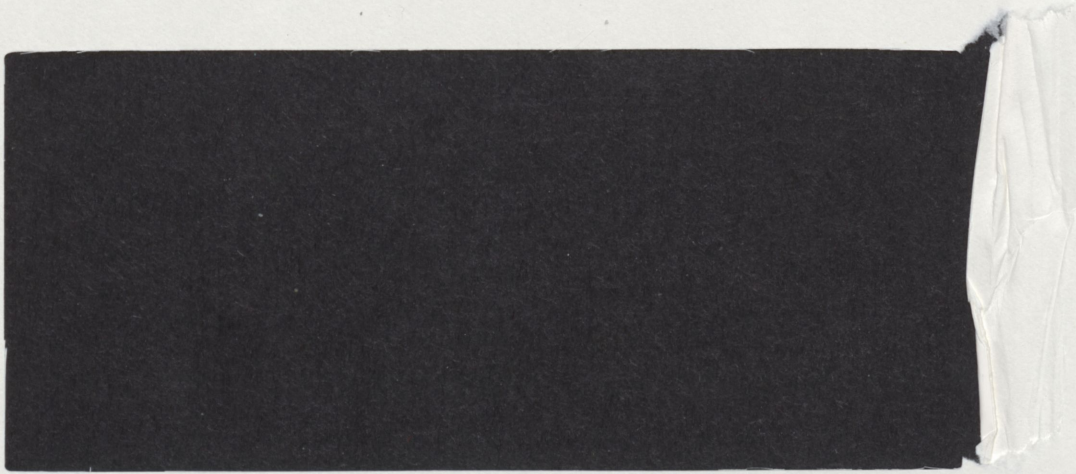
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**COMMODITY MARKETS IN MEXICO
PHASE I REPORT**

(Working Paper 8/93)

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June 1993

This report was completed under contract with Policy Branch, Agriculture Canada.

A diskette containing this working paper in Wordperfect 5.1 and relevant Excel files is available from the Economic Analysis Division upon request.

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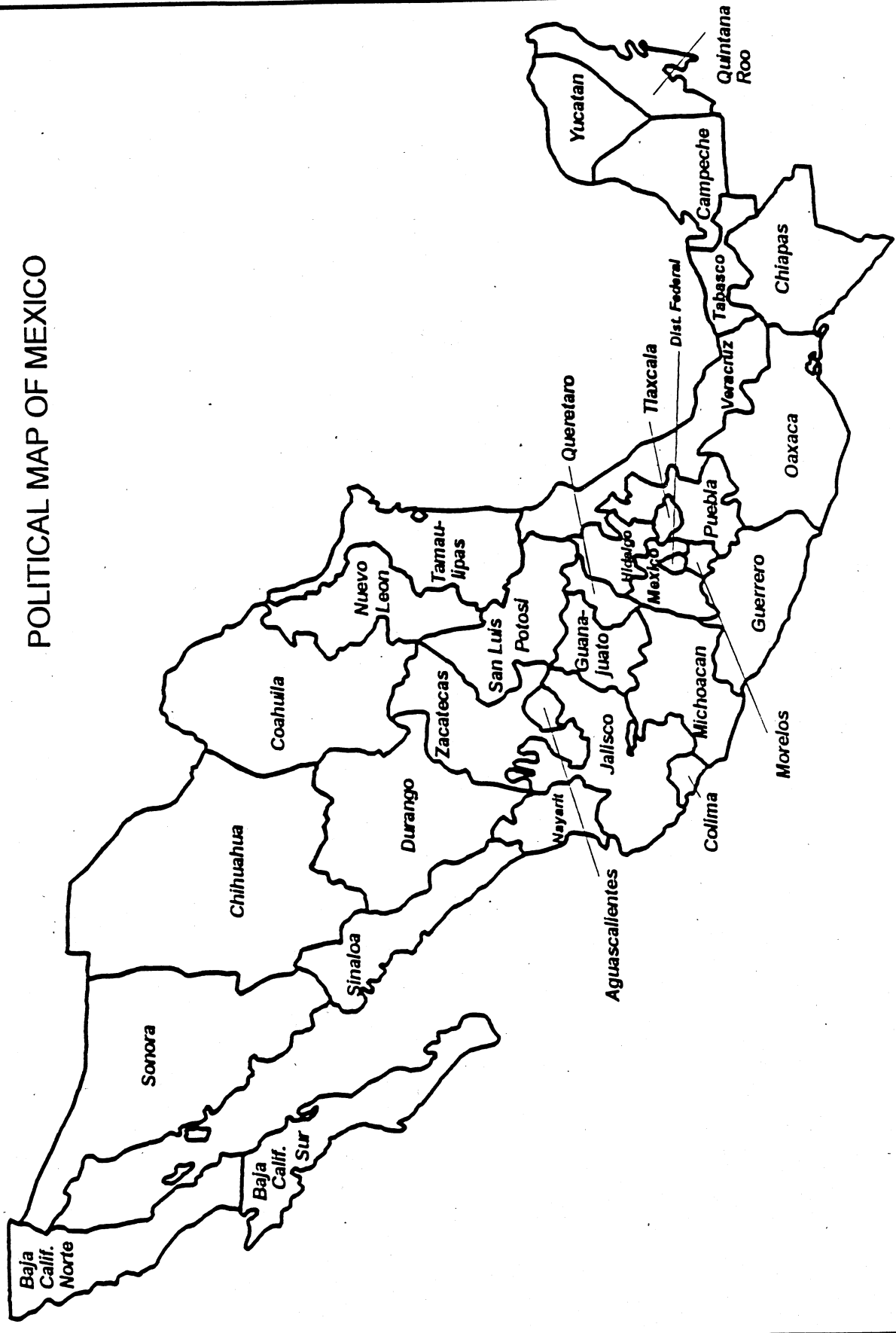
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POLITICAL MAP OF MEXICO



I. INTRODUCTION

A. BACKGROUND

Mexico's policies under the Salinas administration have greatly expanded trade opportunities in agricultural products with Canada and the U.S. The North American Free Trade Agreement (NAFTA) is expected to be passed by all three participating countries and reduce trade barriers further, which will impact Canadian farm exports and Mexican exports to Canada differentially by commodity.

Per capita consumption of cereal products in Mexico is almost double that of Canada/U.S., and less than half the Canada/U.S. level for meat and dairy products. This presents a challenge for Canadian exporters as the Mexican economy makes adjustments as it grows and develops. By closely tracking developments in the Mexican marketplace, Agriculture Canada can provide a valuable service to exporting industries.

It has been suggested that rising incomes in Mexico will favor the import of dairy and meat products that represent higher value-added contents. In addition, rapid consumer growth in income will immediately result in dietary improvements, particularly in protein items, so that meat and dairy livestock will be consuming more feed grains and meat by-products. This will spur cereal and oilseed imports.

Agriculture Canada wishes to have a good understanding of the Mexican market through the monitoring of export opportunities for a variety of grain, oilseed, dairy and meat products. Agriculture Canada also wishes to track imports of these same products from Mexico. Sparks Companies, Inc., has been contracted to provide a system to help assess developments in the commodity sectors which may have a favorable impact on Canadian trade with Mexico. This document represents our findings regarding Phase I of the project.

B. STUDY OBJECTIVES

The objectives of the study are:

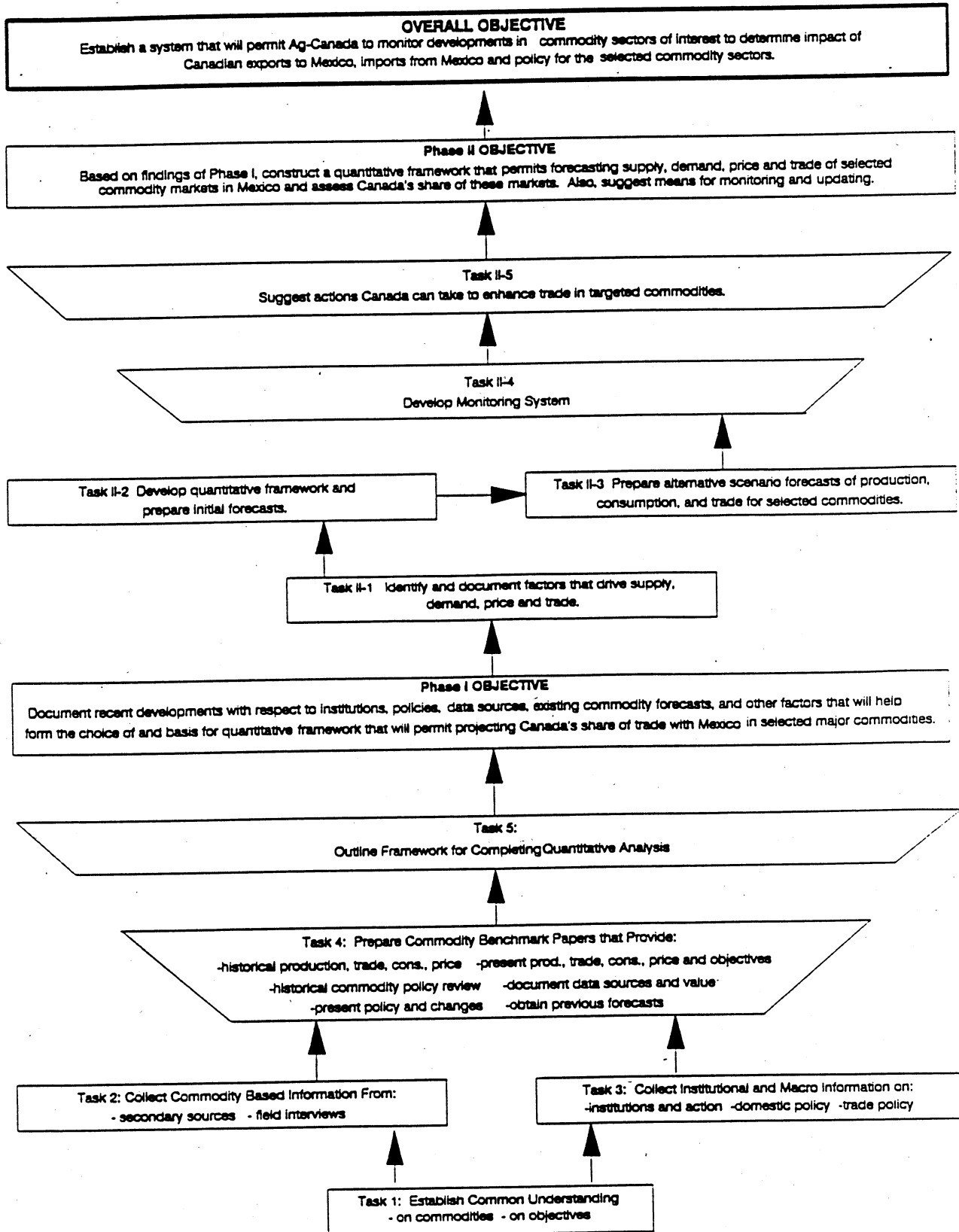
1. Overall

The overall objective of the study will be to establish a system that will permit Agriculture Canada to monitor developments in commodity sectors of interest to determine the impact of Canadian exports to Mexico, imports from Mexico, and policy for the selected commodity sectors (see Figure I-1).

2. Specific

The specific study objectives are divided into Phase I and Phase II:

Figure I-1: Flow of Tasks Required to Meet Study Objectives



Phase One

1. To document existing, recent developments (including those that are being developed currently to respond to the expected new trading environment created by NAFTA) in public sector institutions, domestic policies (including macroeconomic) and trade policies (including NAFTA) affecting the domestic production and trade of agricultural and food products.
2. To document agricultural commodity data sources, previous commodity analysis and forecasts for Mexican agriculture.

Phase Two

3. To identify and quantify the economic factors which affect the supply, demand, price and trade of the main commodity markets in Mexico through the construction of a quantitative framework. Implications for Canada are also to be identified and analyzed.
4. To project likely levels of production, consumption and trade for each of the major commodities in Mexico and likely Canadian share of Mexican trade for the rest of the decade using a quantitative framework.
5. To propose a mechanism to continue to monitor and update this information on a regular basis.

The scope and approach for this document were set out in our original proposal and are restated in Appendix D.

C. ORGANIZATION OF REPORT

A meeting was held in Canada between SCI and Agriculture Canada team members early in this project to discuss and detail the expectations for this project, particularly Phase I. The study scope, as stated in the original RFP, focuses on commodities which are produced in Mexico (not exportable commodities produced in Canada), and some flexibility in the products covered was found advisable. However, it was decided that strong cross relationships between products produced in Mexico and Canada's exportable commodities did exist, so tracking Mexican production was a sound approach. The meeting resulted in a good understanding of what is expected for the total project, both Phase I and Phase II.

SCI staff visited Mexico on two occasions to speak with individuals regarding data availability. Staff members of various Mexican government agencies were interviewed regarding their methodology in sourcing information as well as the manner in which the data is collected and then presented.

Individuals in the U.S. Embassy in Mexico also were interviewed regarding how the USDA arrives at their production, supply and demand figures. Individuals in Washington were interviewed via telephone as well.

SCI in-house staff members were relied upon to provide other work required under Phase I. A country analysis for the products to be modeled in this project is presented and balance sheets containing historical production, supply, demand and trade figures are made available in tabular form.

The SCI team conducted the work required under Tasks I through V of Phase I and this report is organized to present the team's findings in a comprehensive fashion. Sections I through IX, plus the Appendices, contain the following:

Section I Provides background, study objectives and organization of this report.

Section II Provides a brief background and up-date on the current economic situation in Mexico.

Section III Contains background information on Mexico's agriculture and how macroeconomic policy, the GATT and NAFTA deliberations and other key reforms have structurally changed Mexico's agriculture and livestock sectors. The SCI team's outlook and the anticipated formulas for crop subsidy programs are presented.

Section IV Identifies the position of agriculture in the Mexican economy and introduces the roles of feedgrains, foodgrains, livestock, meats and dairy production in the economy. This section also identifies Mexico's livestock and agricultural trade balances and provides a brief review of the country's food processing sector. Finally, observations regarding changes in the communal land system and the country's infrastructure are included in background.

Section V Includes a discussion of Mexican agricultural policy with regards to privatization, land ownership, financing and credit, and producer and consumer subsidies.

Section VI Tariff and non-tariff barriers are discussed. The future tariff structure applicable to Canadian exports to Mexico is listed, and institutional and structural issues affecting trade are identified.

Section VII Key features for each agricultural and livestock commodity are listed in a comprehensive "bullet" fashion. This section includes opinions by the SCI team regarding markets based on country assumptions listed at the beginning of the section. Tables complementing the discussion are included in Appendix A.

Section VIII A review of the SCI team findings regarding data and its availability is included in this section. Findings regarding availability and reliability of data for modeling purposes are included.

Section IX A preliminary statement regarding the model to be built is presented. Figure IX-1 identifies the nine steps required to properly develop, test and refine the model which will be formulated.

Appendix A Provides supply/use balance sheets for each Commodity, including pricing information. The second balance sheet provides per capita consumption figures.

Appendix B Lists contacts made during visits to Mexico.

Appendix C Lists articles reviewed with regards to modeling work.

Appendix D Restates the Scope and Approach for the study from the original proposal.

Appendix F Provides tables which are expected to be used to calculate international commodity prices and federal support payments by the Mexican government.

Appendix G Restates the Phase II work required from the original proposal.

II. CURRENT ECONOMIC SITUATION AND OUTLOOK

The Mexican economy has shown signs of strain in 1992, with growth declining to the slowest rate since 1988. A particularly disastrous second quarter led the government to lower its 1992 growth target from 4% to 2.7%, and the final figure was an even lower 2.6%. Inflation had originally been forecasted to finish in single digits for the year, but the actual figure has ended up closer to 12%. The country's current account deficit, which has steadily grown over the last three years and was almost US\$23 billion last year. Most of the deficit was generated by commercial trade. Government spokespersons claim the widening trade gap is a by-product of trade liberalization and is not necessarily negative, but rather an indication that substantial new investment is taking place in Mexico. Official figures for 1992 show that capital and intermediate goods are by far the largest share of imports (24% and 60% respectively). Consumer goods represented only 16% of the imports total. Nevertheless, the argument that recent history demonstrates that all countries undergoing significant development (for example, the post-war economies of Japan, Korea, Taiwan and Germany) registered large trade deficits during the early stages is tempered by the fact that the rate of increase is well beyond that which has been projected. Mexico's salvation with regards to its balance of payments situation has been capital inflows, including repatriated flight capital, which have had a steadying influence. It has allowed central bank reserves to maintain a \$US17 billion level for 1992. The greater part of the capital infusion, however, resides in the popular Mexican Stock Exchange, which in 1992 surpassed all but the Hong Kong stock market in growth, but does not offer the long-term foreign investment the government would prefer. At some point, steps will have to be taken to address the growing trade deficit, as continued reliance on foreign investment to balance the books cannot continue indefinitely.

The trade deficit also has created a growing concern with the government's approach to the peso/dollar exchange rate. Mexican exporters have supported a devaluation of the peso, as have industry sectors which have been affected by import surges. A weaker peso would theoretically help exports and make imports more expensive, thereby reducing the trade deficit (but, possibly fueling inflation). It now appears that proponents of devaluation have begun to get support from independent economists who are suggesting that the gradual devaluation of the peso (a daily slippage amounting to about 5% per year against the U.S. dollar), should be tripled in order to bring reality to the currency relationship. Other experts in the field feel that the peso is anywhere from 10% to 20% overvalued right now. In response, the government suggests that the slowdown in Mexico's exports is more due to a decline in the volume of agriculture, mining and petroleum products, all of which are suffering from downward international pricing pressures. The government is expected to continue to defend the peso in the near term, which would support growth of further imports.

There have been no tax changes under the new federal budget, providing ample evidence that "reform", as it has been applied to the economy, is now policy. Privatization of government interests will continue and the Solidarity Pact (in which government, labor and industry agree on price guidelines) will continue to control inflation. Social spending will depend more and more on what is available in the budget after debt service, and trade, with some minor exceptions, will be allowed to continue expanding unencumbered by restrictions.

At the core of the government initiatives over the past four years is the ultimate creation of industry sectors capable of generating jobs far in excess of present population growth trends. The country's approximately 90 million inhabitants lived through a time period in the mid-1980s in which they witnessed a 50% drop in real purchasing power. The programs for development established now are designed to not only re-absorb the unemployed and under-employed, but to provide meaningful jobs which will provide a way to regain that lost purchasing power and then systematically raise the country's standard of living. There are indications that the pursuit of these goals is finally providing some "trickle down" opportunities to the general public. The nation's GDP has grown to approximately US\$330 billion, not really significant when compared to its northern neighbor, but indicative of the growth potential which exists in Mexico, particularly when viewed in the context of the North American Free Trade Agreement(NAFTA).

The Mexican government 1992 numbers covering how sectors of the economy contribute to total GDP were not complete at the time of publication. However, data for the 1988-1991 time period shows that the sector including agriculture and livestock remained flat. Preliminary indications for 1992 are that this sector was slightly up as a percentage of GDP and topped the 8% mark. Table II-1 provides the total GDP for each year from 1988-1991, and the percentage distribution by economic sector.

Table II-1: Mexico's GDP, and Percent of GDP by Sector

| | 1988 | 1989 | 1990 | 1991 |
|--|--------------------|----------------|----------------|----------------|
| GDP IN PESOS (BILLIONS) | 390,451 | 507,618 | 686,406 | 865,166 |
| PERCENT OF GDP BY SECTOR: | - PERCENT - | | | |
| - Agriculture, Livestock, Forestry, Fishery | 7.86 | 7.73 | 7.99 | 7.71 |
| - Mining | 3.27 | 2.68 | 2.58 | 2.09 |
| - Manufacturing | 27.00 | 24.44 | 22.75 | 22.25 |
| - Construction | 4.03 | 3.86 | 3.97 | 4.19 |
| - Electricity, Water, Gas | 1.27 | 1.34 | 1.38 | 1.51 |
| - Commerce, Restaurants, Hotels | 27.31 | 26.68 | 26.05 | 24.75 |
| - Transport, Warehousing, Communications | 7.56 | 7.41 | 8.23 | 8.85 |
| - Financial Svcs., Insurance, Real Estate | 7.85 | 10.40 | 11.80 | 12.53 |
| - Social Services | 15.33 | 16.05 | 16.36 | 17.39 |
| - Imputed Banking Services | -1.47 | -0.59 | -1.10 | -1.27 |

Source: INEGI (Government of Mexico)

III. MACROECONOMIC ENVIRONMENT FOR THE AGRICULTURAL CENTRE

A. BACKGROUND ON MEXICO

Mexico's economic problems began in the 1970s when high oil prices induced lenders to extend loans to the government. This total exceeded US\$86 billion by the summer of 1982 and eventually became too large to be serviced. As a result, foreign banks stopped lending to the public and private sectors of Mexico as the government declared a moratorium on debt servicing. The situation was further aggravated by the collapse of world oil and natural gas prices. At the same time, the administration of President Lopez Portillo was continuing the process of nationalizing major basic industries and services, culminating in the nationalization of banks in 1982. The years of the mid-1980s were marked by economic contraction, lower living standards, capital flight, and mass migrations to the major urban areas as well as emigration to the U.S. in search of employment. The devastating earthquake of 1986 was the symbolic bottom of Mexico's "lost decade", as the 1980s have come to be regarded.

The decade of economic stagnation did not begin to be corrected until the government took significant and dramatic steps to reform the economy. Beginning with the administration of President de la Madrid it became obvious that a new direction was needed to lift the economy out of the doldrums. Acknowledging that a closed, import-substitution policy, common in many countries in the time period leading up to Mexico's crisis, was actually dampening economic development, the de la Madrid administration made the bold first step towards integrating Mexico into the global economy. That first step was the decision to join the General Agreement on Tariffs and Trade (GATT) in 1986.

The effects of joining the GATT were immediate, as trade barriers were lowered and some were ultimately eliminated. Free market forces were gradually injected into all industry sectors, to the benefit of the economy as a whole. The process of liberalization has gained speed under the administration of Carlos Salinas de Gortari, who took over in 1988, and his most noteworthy accomplishments are:

- The privatization of government-owned businesses which has produced more than US\$30 billion in revenues, most of which has been applied towards the reduction of the public debt. Included in the companies sold are the national telephone company, airlines, hotel chains, steel and mining industries, insurance companies and all the commercial banks.
- Created investor confidence which has resulted in more foreign investment. Over US\$20 billion has been attracted so far.
- Reduced inflation from over 150% in 1987 (and over 50% in 1988) to 12% in 1992, and is expected to lower to single digits in 1993.

- The tax system has been modernized by enhancing compliance and reducing rates to a uniform rate parallel to the U.S. The restrictions on ownership and the repatriation of profits have also been liberalized significantly.
- The overall government bureaucracy has been streamlined, with more private sector initiatives taking the place of what was formerly the work of federal and state governments.

At the same time internal economic adjustments have been realized, the Salinas administration has actively pursued expanding markets for Mexican products beyond its borders. Early in his administration he proposed eliminating tariff barriers between the U.S. and Mexico, having viewed the U.S./Canada free trade agreement as positive for the Northern Hemisphere. These preliminary overtures were also the result of having seen first-hand during a visit to Europe that the wave of the future was regional commercial "units" such as the European Economic Community (EEC). In August, 1990, Presidents Salinas and Bush agreed to negotiate a bilateral trade pact through which most of the tariff and non-tariff trade barriers between the countries would be eliminated.

The key objectives in Mexico's desire for a trade agreement was to bolster foreign investment and secure access to the American market, the destination of 70% of all Mexican exports. The U.S. embraced the initiative, noting Mexico's large oil reserves, core industrial capacity, labor resources and growth potential. Subsequently, Canada joined in the negotiations, resulting in a trilateral agreement known as the North American Free Trade Agreement (NAFTA).

The final text of the NAFTA has been agreed to by the three countries, although before the trade accord can go into effect it requires ratification by their respective Parliaments or Congress. The impact of the NAFTA on North American farm trade may still depend on the outcome of the global trade talks. However, many of the key trade issues are regional in scope, a fact acknowledged in both the CUSTA and the proposed NAFTA. Tearing down trade barriers in North America is of keen interest to agriculture in all three countries, despite the relatively small volumes of farm products which are presently traded between Canada and Mexico.

The NAFTA regulations, once implemented, will eliminate most customs duties either immediately (about 50% of all tariffications will go to zero in the first year) or over phasing periods of five or ten equal annual stages. There are some sensitive items where the tariffs will be phased out over a period of fifteen years. The U.S. generalized system of preference and the Canadian general preferential tariff rate bases as of July 1, 1991 and the tariff phase out under the CUSTA are adopted as base-points and remain a part of the schedules as previously agreed.

The exceptions to the phase-out of tariffs, from the Canadian side, are in those areas that are still supply managed, such as dairy, poultry, and eggs. Canada will exempt Mexico from import restrictions covering wheat and oats and their products, plus beef, veal and margarine. Fruit and vegetable tariffs will be phased out over a five-year period of time, except for the most sensitive fruits and vegetables which are being phased out over 10 years. All non-tariff barriers will be eliminated between the U.S. and Mexico and converted to Tariff Rate Quotas (TRQ). However, Canada and Mexico will retain import restrictions on dairy, poultry and egg products. TRQ's will allow levels based on previous averages (1989-1991) into each country duty-free, with duties or tariffs reset at higher levels to start and assessed against only the over quota sales or imports. These frontier measures will be phased out over ten or fifteen years. Most TRQ's will be adjusted in volume with a 3% increase each year.

Which segments in each of the three countries will win or lose under the NAFTA agricultural trade provisions is still open to debate. Although the NAFTA text was published in September 1992, and its provisions for agriculture were known then, the debate and final conclusion will continue until the parallel agreements are agreed upon and the pact ratified by the three countries. Few will dispute that agricultural trade will increase, as the growth experienced in the last three years indicates a solid upward trend; however, the different agricultural and livestock sectors will not share equally in the growth.

From the U.S. perspective the livestock, poultry and egg segments expect to benefit although the dairy industry remains concerned that its import quotas will be removed. U.S. and Canadian grain, oilseed, and feed exports are expected to grow under NAFTA. The same general attitude applies to the processed foods sector, even though regulatory, distribution and marketing difficulties within Mexico pose bigger challenges. The reaction from the citrus, fruits and other horticultural products industries in both the U.S. and Canada has been the most divided, as Mexico enjoys a decided competitive advantage in labor-intensive agriculture product areas. On the other hand, Mexico views its opportunities in increased agricultural exports to be specifically in horticultural and citrus products, with other product areas being dependent on developments in sugar quotas, rules of origin with regards to cotton, and phytosanitary issues which affect fresh meat exports. In addition, Mexico believes it will have increased opportunities in canned and bottled foodstuffs and liquors.

The key reform affecting agriculture in Mexico struck at the heart of its revolutionary roots dating back to the 1917 Constitution, when the first land was expropriated from large landholders and given to poor farmers. Over the course of history every president up to Miguel de la Madrid expropriated land under the aegis of "agrarian reform". By the time President Salinas addressed the problem of agricultural inefficiencies created by the "ejido" system, there was a large number of hectares in small lots. By repealing Article 27 of the Agrarian Reform Law Salinas proposed to give the land to the individual working the land. Over the years many farmers had developed squatters rights on the land anyhow, although the land legally belonged to the Mexican government. Now, under specific regulations allowing for establishing ownership rights, a farmer, once having title to the land, could use its value in any way. He could sell it, rent it, or

use it for collateral for loans, among other possibilities. Although there are still restrictions on the amount of contiguous acreage which can be utilized for specific crops or grazing animals, the availability of this acreage increases the possibility for Mexico to develop "corporate farming". The goal is to allow producers to make their own decisions regarding inputs, crop choice, seeds and the latest production technology so that production efficiencies can be obtained over time.

When President Salinas sent the Article 27 Reform Bill to Congress in November 1991, he proposed modifications as follows:

- a) End land distribution - The "ejido" system now accounts for over 200 million acres or about 50% of Mexico's arable land.
- b) Authorize ejidos to associate with outside investors - Approximately 30% of the population is directly or indirectly affected by changes in the ejido system, according to the USDA. The Salinas administration is hoping that the change in land tenure laws will result in enough interest by outside investors to prevent further flight from rural to urban areas of the country.
- c) Authorize ejidos to establish individual property rights - By allowing such flexibility, the Mexican government is in essence "privatizing" land and creating new capital for the rural areas which is not government sourced.
- d) Establish agrarian law courts - By specializing the court system, quicker decisions regarding ownership and property rights are possible.

The Bill was passed in December of 1991, but implementing rules and regulations which were published in 1992 are not yet being smoothly applied. It is, therefore, difficult to identify significant changes created through the regulatory by-laws which govern the "ejidos". However, once the rules and regulations governing ownership are in place many smaller farmers will have expanded options with regards to how they use their land.

How farm output and performance in Mexico will be affected is also difficult to predict at this point in time. A majority of small farmers depend on corn and edible bean production as a primary source of income. The Mexican government, through CONASUPO, continues to maintain higher guaranteed producer prices for these products in comparison to other crops; and these prices are well above market prices. Price distortions between corn and edible bean prices versus the other commodities have increased the acreage planted to the two primary crops. Nevertheless, increased export opportunities in crops such as vegetables and citrus should draw more attention from individuals and companies looking for agricultural investments, and the new ownership laws should facilitate more market driven shifts in Mexico's farm structure.

B. KEY FACTORS AFFECTING AGRICULTURE AND FOOD CONSUMPTION

Market access provisions under NAFTA, once implemented, will introduce additional shifts in Mexico's food consumption habits and agriculture. However, the more difficult transitions are scheduled to be softened through the use of tariff rate quotas (TRQ's) and phase out periods of five, ten or fifteen years. Under NAFTA the long run effect will be most noticeable in those commodities for which there is market demand in two or all three NAFTA countries, or in those commodities where one country has a clear competitive advantage.

The main exports to Mexico from the U.S. and Canada which are expected to expand with liberalized trade include feed grains, oilseeds, meat and dairy products. Mexican exports which are expected to increase under NAFTA are tropical and horticultural crops, particularly coffee, fruits and vegetables.

The expected production adjustments will be larger for Mexico than for the U.S. and Canada, as Mexico begins from a smaller base. In addition, Mexico faces constraints in water availability, prime land, labor productivity, transportation, distribution and other factors related to agriculture. Under NAFTA the growth rate of personal income is expected to increase in Mexico, and demand for imported products will expand faster than the country's production capacity to meet that demand, in part due to the reasons stated above. Imports are expected to grow to fill this gap, but at the same time Mexican production could become oriented towards filling national requirements, which will theoretically reduce the quantity available for export. This will create short and medium term net export opportunities for U.S. and Canadian shippers. Over a period of ten years or more, the continued increase in Mexican personal income from NAFTA (from other sectors) is expected to have an annual positive impact on U.S. and Canadian agriculture.

Food processors in the U.S. and Canada will have increased export opportunities as well. Affiliates in Mexico purchase most of their food inputs from within the country and generally approach sales expansion in export markets through direct investment in foreign facilities or licensing. Having a presence in the host country allows packaged foods companies to maintain marketing and distribution controls. However, the proximity of the Mexican market, and the anticipated excess demand for a wide variety of food products, will create near term opportunities for U.S. and Canadian exporters of canned and bottled foodstuffs. Over the long-term, Mexico will reconfigure its food processing capacity with continued direct investment which has increased with the liberalization of trade and foreign investment policies.

IV. THE AGRICULTURE SECTOR

A. AGRICULTURE TODAY IN THE MEXICAN ECONOMY

Of Mexico's US\$330 billion economy, agriculture, livestock, lumber and fishery activities represent about 9% of the total. In the last year (1992) this reporting segment has risen from its more historical levels of 8% of GDP. At present growth rates the agriculture related segment is expected to represent about 10% of the total GDP in 1993. Not unlike other countries, agriculture's political importance in Mexico far exceeds its actual contribution to the economy, particularly in light of the communal land system under which it has operated since the revolution.

Economic conditions in the food sector contrast sharply with the general economy, however, as demand has been robust for meat, food grains, and oilseeds. Beef demand has been the most impressive, as cattle and beef prices have moved higher at the same time that supplies of beef from domestic production and imports have moved upward, reflecting Mexico's links with the U.S. market. In the poultry markets, the broiler industry is expanding at double digit rates in response to profits in past years and the expectation that lower costs (resulting from NAFTA) will allow for profitability in coming years.

The expansion in the broiler industry is supporting an unprecedented demand for feedstuffs. Soybean meal imports reached record levels this year in order to support the expansion of the broiler and hog industries. Based on the continued expansion in these meat industries during the next few years, soybean meal imports will move far beyond the trade levels that have been seen to date. Canola meal will experience similar demand conditions.

The oilseed processing industry in Mexico will be challenged to balance the demand for vegetable oils against the demand for meal. The demand for vegetable oil is not expected to grow as fast as the demand for meal. The domestic supply of soybeans is also expected to be static, as Mexican agricultural policies favor higher value cash crops and corn at the expense of soybeans. As a result, Mexican soybean processors are expected to increase their imports of soybeans by enough to cover the domestic demand for vegetable oil and let the surplus demand for soybean meal be satisfied by imports.

Demand for food grains has also been impressive in 1992. A 950,000 metric ton downturn in wheat production is being offset by a similar increase in imports. In light of recent rising prices for wheat, the interest in buying wheat at these higher prices has made an impressive statement about the demand for food grains in Mexico.

Perhaps the biggest challenge facing Mexico's food industry during the next five years will be the overhaul of the food distribution and marketing system. Currently, this system is strained to transmit the demands of consumers to food producers and processors in an efficient manner. This is especially true for any further processed or value-added

food products which require different approaches and flexibility within the system to keep up with consumer demands. The pork and broiler industries have felt the impact of these inefficiencies to the greatest extent, since the new products they are going to rely on to expand consumption are usually marketed with a higher degree of processing in order to realize sales by the end consumer. The success in solving these infrastructure problems will play a large role in how far the pork and broiler industries can expand, and this will determine the ultimate demand for feed grains and protein meal.

Total feed grain production (sorghum, barley, oats, and including corn, which is acknowledged as primarily a food grain in Mexico) is expected to grow about 7.5% from now to 1997 to over 18 million metric tons. About 15.5 million metric tons will be corn. Feed grain imports, however, are expected to rise about 15% to 9.4 million metric tons over the same time period. The composition of food use to feed use (once again taking into consideration the predominant use of corn for human consumption) is expected to change from a 58% food/42% feed relationship to a 56% food/44% feed relationship over time.

Economic growth and improved incomes are forecast to keep corn demand high over the next five years. The reduction of trade barriers due to implementation of the North American Free Trade Agreement (NAFTA) provides the basis for the forecast of expanded use. Under the agreement, Mexico may import duty free up to of 2.5 million tonnes of corn during 1994 and allow 3 percent annual expansion in subsequent years. Also the tariff on grain sorghum will be eliminated.

Sorghum use is expected to trend upward as livestock and poultry feeding activities continue their expansion. The Mexican government will apparently continue its policies of reduced support for sorghum production and under terms of NAFTA, tariffs will be eliminated immediately. The result should be a continued high level of imports to supplement a 2.2 million tonne annual production. Imports are projected to steadily increase.

Pork demand was disappointing in 1992. Hog prices will decline from last year while per capita pork supplies increase by 0.6 kilograms. Normally, the rising price of beef would provide some support for pork and hog prices, but that was not the case in 1992. The hog production sector is in the process of restructuring toward larger, capital intensive facilities and this trend is expected to continue into the foreseeable future. This could result in more sophisticated inputs utilization (including whey) to help reduce costs. Flat pork demand, however, will be the biggest factor limiting the expansion of the industry.

The dairy industry is improving efficiency and productivity under a market oriented environment and competition from imports. Those dairymen who have made the transition from protected status to the application of newer and more competitive herd management programs are expected to maintain, and increase profit. However, in a number of cases, old practices may doom those unable to change. The Mexican government stressed free market orientation and, in keeping with their anti-inflation stance, has not given in to producer pressures for price supports and subsidies. The

government's future role is expected to be limited to the distribution of milk to poor families through its agency, LICONSA.

Fluid milk consumption continues to grow faster than production, which is estimated to continue to lag in growth through the end of the decade. This has resulted in increasing imports of non-fat dry milk (NFDM) which should remain at high levels despite increased domestic production. Although fluid milk production is expected to increase in 1993 due to an increase in the herd, favorable weather and the decontrol of fluid milk producer prices, there will still be a considerable shortfall. The government is encouraging producers and processors to enter into long term relationships, particularly in the South where production is seasonal, and is in the process of developing useful market information and official standards. At the same time, NFDM is imported at prices which dairymen believe are unfair and reduce fluid milk prices.

B. LIVESTOCK, AGRICULTURE AND FOODSTUFFS TRADE BALANCE

Over the years 1987-1991 Mexico maintained an agriculture trade balance which was fairly level. In 1986 the country experienced its last large livestock and agricultural trade surplus. Since that time imports have generally risen in relation to exports (See Table IV-1).

Table IV-1
Livestock and Agriculture Trade Balance 1986-1992
(Million of Dollars)

| ITEM | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 |
|---------------|----------|----------|----------|----------|----------|----------|----------|
| Trade Balance | 1,15.33 | 414.42 | -127.00 | -288.50 | 48.47 | 204.55 | -726.67 |
| Exports | 2,086.26 | 1,519.94 | 1,638.90 | 1,706.89 | 2,110.72 | 2,290.83 | 2,088.87 |
| Imports | 934.93 | 1,105.52 | 1,765.90 | 1,995.39 | 2,062.26 | 2,815.54 | |

Source: Bank of Mexico Jan. 1993

Total imports grew significantly in 1992. The largest growth came as a result of increased food and beverage imports, which more than doubled the total in the 1991 reporting period. Imports for all products (including forestry products) increased 35 percent while exports of all products decreased by 12 percent. This resulted in a net increase in the expanded trade balance (which adds foodstuffs and beverages) deficit of over US\$1.5 billion (see Table IV-2).

Table IV-2
Expanded Livestock and Agriculture Trade Balance 1991-1992
(Thousands of Dollars)

| ITEM | 1991 | 1992 | Variation % |
|---------------------------|------------|------------|-----------------|
| | | | 92-91 |
| Trade Balance 1/ | 204,457 | -726,671 | -455.4 |
| Expanded Trade Balance 2/ | -1,163,703 | -2,877,802 | (Deficit) 147.3 |
| Exports 1/ | 2,290,743 | 2,088,873 | -8.8 |
| Imports 1/ | 2,086,286 | 2,815,544 | 35.0 |
| Expanded Exports 2/ | 3,506,321 | 3,216,207 | -8.3 |
| Expanded Imports 2/ | 4,670,024 | 6,094,009 | 30.5 |

1/ Includes Agriculture, Forestry and Livestock

2/ Includes Agriculture, Forestry, Livestock, Foodstuffs and Beverages

Source: Bank of Mexico Jan. 1993

The composition of the food and beverage imports is presented in Table IV-3. The largest single item increases in value terms were powdered milk (up 243%), soy oil (up 86%) and palm oil (up 48%). However, it is worth pointing out that feed ingredients and butter experienced significant increases as well.

TABLE IV-3
IMPORTS OF FOODSTUFFS AND BEVERAGES, JAN/SEPT 1991-1992
 (Thousands of Dollars and Metric Tons)

| Product | Value | | Variation | Volume | | Variation |
|-----------------------|-----------|-----------|------------|---------|---------|------------|
| | 1991 | 1992 | % 92/91 | 1991 | 1992 | % 92/91 |
| Foodstuffs, Beverages | 2,583,738 | 3,278,465 | 26.89 | - | - | - |
| Soy Oil | 17,915 | 33,399 | 86.43 | 40,949 | 80,589 | 96.80 |
| Palm Oil | 13,263 | 19,565 | 47.52 | 35,802 | 30,262 | -15.47 |
| Feed Ingredients | 127,073 | 181,416 | 42.77 | 514,107 | 628,485 | 22.25 |
| Sugar | 262,293 | 37,926 | -85.54 | 841,452 | 132,469 | -84.26 |
| Refrigerated Meats | 609,408 | 693,586 | 13.81 | 395,248 | 484,257 | 22.52 |
| Fish Meal | 9,600 | 17,873 | 86.18 | 22,180 | 37,301 | 68.17 |
| Soy Meal/Other Meal | 2,704 | 3,014 | 11.46 | 10,967 | 12,323 | 12.36 |
| Powdered Milk | 108,248 | 371,202 | 242.92 | 58,138 | 212,913 | 266.22 |
| Lard | 10,504 | 12,100 | 15.19 | 23,262 | 24,659 | 6.01 |
| Natural Butter | 57,941 | 70,748 | 22.10 | 34,698 | 39,308 | 13.29 |
| Pork Skins | 79,827 | 83,872 | 5.07 | 93,937 | 103,957 | 10.67 |
| Animal Fats | 69,486 | 68,974 | -0.74 | 27,069 | 34,755 | 28.39 |
| Other | 1,216,476 | 1,593,675 | 31.00 | - | - | - |

Source: Banco De Mexico Jan. 1993

Exports of Mexican foodstuffs and beverages were primarily in beer, packaged vegetables and fruits, liquor and, to a lesser degree, shrimp.

Imports of livestock and agricultural items into Mexico increased 43 percent in value terms from 1991 to 1992. Grains and oilseeds led the way, followed by fruits and live cattle. The biggest decrease in imports came in dry beans. The total for the top imports during 1992 are shown in Table IV-4.

Table IV-4
Livestock and Agricultural Imports, 1991-1992
(Thousands of Dollars and Metric Tons)

| Product | Value | | Variation | Volume | | Variation |
|--------------------------------------|------------------|------------------|--------------|-----------|-----------|-----------|
| | 1991 | 1992 | % 92/91 | 1991 | 1992 | % 92/91 |
| Total Imports | 2,086,286 | 2,815,544 | 34.95 | - | - | - |
| Agriculture and Wood Products | 1,663,276 | 2,379,536 | 43.06 | - | - | - |
| Natural Rubber | 69,606 | 60,135 | -13.61 | 80,227 | 68,918 | -14.10 |
| Barley | 10,424 | 17,372 | 66.65 | 91,333 | 132,046 | 44.58 |
| Diverse Species | 31,971 | 41,774 | 30.66 | 11,473 | 16,893 | 47.24 |
| Dry Beans | 18,475 | 2,144 | -88.40 | 31,241 | 2,807 | -91.02 |
| Fresh or Dry Fruit | 69,261 | 110,827 | 60.01 | 101,390 | 183,744 | 81.22 |
| Fresh Vegetables | 38,658 | 50,355 | 30.26 | 121,536 | 142,342 | 17.12 |
| Ordinary Wood Products | 24,431 | 29,502 | 20.76 | 140,497 | 129,460 | -7.86 |
| Corn | 178,531 | 183,311 | 2.68 | 1,421,705 | 1,305,670 | -8.16 |
| Other Feed grains | 3,823 | 3,281 | -14.18 | 15,816 | 30,493 | 92.80 |
| Oilseeds | 228,656 | 220,249 | -3.68 | 653,747 | 639,388 | -2.20 |
| Cotton Seed | 83,966 | 173,102 | 106.16 | 131,095 | 344,866 | 163.07 |
| Soybeans | 348,513 | 512,133 | 46.95 | 1,489,310 | 2,101,091 | 41.08 |
| Sorghum | 361,923 | 542,137 | 49.79 | 3,200,388 | 4,726,681 | 47.69 |
| Wheat | 67,032 | 163,540 | 143.97 | 540,921 | 1,076,514 | 99.02 |
| Others | 128,006 | 269,674 | 110.67 | - | - | - |
| Livestock | 423,010 | 436,008 | 3.07 | - | - | - |
| Live Cattle (Head) | 182,857 | 200,202 | 9.49 | 227,336 | 252,214 | 10.94 |
| Raw Wool | 20,530 | 17,702 | -13.77 | 4,556 | 4,176 | -8.34 |
| Raw Hides | 133,505 | 135,162 | 1.24 | 104,429 | 104,221 | -0.20 |
| Other | 86,118 | 82,942 | -3.69 | - | - | - |

Source: Banco De Mexico Jan. 1993

Exports from Mexico of livestock and agricultural products fell almost 9 percent during the period of 1992 over 1991. The decreases occurred across the board as presented in Table IV-5.

Total international trade by Mexico amounted to US\$105 billion in 1991, with livestock, agricultural products, foodstuffs and beverages amounting to US\$8.2 billion or about 8 percent of total trade. This percentage is expected to remain constant once the official 1992 numbers are finally tabulated and available.

Table IV-5
Livestock and Agricultural Exports, 1991-1992
(Thousands of Dollars and Metric Tons)

| Product | Value | | Variation | Volume | | Variation |
|---------------------------------|------------------|------------------|--------------|---------|---------|------------|
| | 1991 | 1992 | % 92/91 | 1991 | 1992 | % 92/91 |
| Total Exports | 2,290,744 | 2,088,873 | -8.81 | - | - | - |
| Agriculture and Forestry | 1,876,855 | 1,714,860 | -8.63 | - | - | - |
| Cotton | 76,920 | 31,236 | -59.39 | 57,722 | 25,393 | -56.01 |
| Cocoa | - | 21,108 | - | - | 21,814 | - |
| Green Coffee | 368,047 | 258,117 | -29.87 | 203,986 | 191,510 | -6.12 |
| Fresh Strawberries | 20,766 | 12,241 | -41.02 | 15,102 | 9,388 | -37.84 |
| Dry Beans | 507 | 6,828 | 1,246.75 | 417 | 25,345 | 5977.94 |
| Chick Peas | 32,025 | 35,535 | 10.96 | 43,450 | 36,554 | -15.87 |
| Tomatoes | 261,739 | 202,430 | -22.66 | 443,192 | 219,461 | -50.48 |
| Fresh Vegetables | 489,481 | 551,084 | 12.59 | 910,950 | 890,363 | -2.26 |
| Corn | 2,829 | 2,808 | -0.74 | 16,185 | 18,506 | 14.34 |
| Melons | 142,150 | 89,172 | -37.27 | 418,476 | 295,296 | -29.44 |
| Other Fresh Fruit | 283,487 | 319,373 | 12.66 | 577,591 | 577,870 | 0.05 |
| Sesame Seed | 44,365 | 33,766 | -23.89 | 41,197 | 25,109 | -39.05 |
| Tobacco in Stems | 44,452 | 13,869 | -68.60 | 16,542 | 4,452 | -73.25 |
| Other | 110,088 | 137,293 | 24.71 | - | - | - |
| Livestock | 413,889 | 374,013 | -9.63 | - | - | - |
| Live Cattle (Head) | 358,312 | 329,738 | -7.97 | - | - | - |
| Bee Honey | 50,489 | 38,032 | -24.67 | 50,330 | 37,542 | -25.41 |
| Others | 5,088 | 6,243 | 22.70 | - | - | - |

Source: Bank of Mexico Jan. 1993

In review, there is a growing trade balance deficit in Mexico's trade in livestock, agricultural and food and beverage products. This indicates increasing demand in the country and an inability to produce enough domestically to meet the new requirement levels. Not fully reflected in these figures are the 4th quarter tariffs put in effect by the Mexican government covering beef products, and the domestic corn sales by CONASUPO which reduced anticipated sorghum imports during December of 1992 (and during first quarter 1993). Mexico is expected to continue to generate trade deficits in agriculture and livestock products in the near and mid-term, regardless of on-going efforts to protect specific (i.e. the most vocal) industries from imports and other free market factors. Foodstuffs imports are expected to grow as well, as economic conditions strengthen and purchasing power by the public increases in excess of Mexico's national capacity and capability to meet increased demand.

C. FOOD PROCESSING

Private business activity has been supported in the food industry. Most recently, legal and regulatory changes have been introduced which could significantly alter the agricultural (i.e., land reform) sector and selected food processing industries. In anticipation of ratification of NAFTA, foreign companies are already locating processing and/or distribution facilities in Mexico, or expanding existing capabilities.

After a decade of flat per capita economic growth and price controls there has been a significant growth in domestic demand. During the 1980s food industry growth still outpaced overall manufacturing growth, even though the greatest portion of the increase was export related; however, beginning in 1989 the domestic food industry has shown steady growth. The growth has occurred in food processing of all types despite capital constraints, high transport and other distribution costs and the regulatory and legal environments. There is a tendency to define the growth as more directly related to lower labor costs than anything else; but as seen above, when considering the whole range of commercial factors, businesses appear to be increasingly bullish on the market more than any one factor.

As a percentage of total GDP, food and beverage manufactures average about 6 percent of the total. As a percentage of total manufacturing (which averages about 27 percent of GDP) food and beverage manufacturing therefore accounts for approximately 22 percent of the total. Based on a US\$330 billion GDP food and beverage manufactures are approximately US\$20 billion, although according to the American Chamber/Mexico total food and beverage consumption (including non-manufactures) accounts for almost 35 percent of total GDP (versus 13 percent in the U.S.). By value of production, beverages lead all sectors within the industry:

MEXICO'S FOOD INDUSTRY BY VALUE OF PRODUCTION

| | Percent of <u>Total</u> | Estimated <u>Value (1992)</u> |
|--------------------------|----------------------------|----------------------------------|
| 1. Beverages | 22% | US\$4.40 Billion |
| 2. Oils | 16% | 3.20 |
| 3. Dairy | 11% | 2.20 |
| 4. Bread | 9% | 1.80 |
| 5. Milling | 8% | 1.60 |
| 6. Meats | 6% | 1.20 |
| 7. Nixtamal (Corn Flour) | 6% | 1.20 |
| 8. Candy | 3% | .60 |
| 9. Other | 19% | 3.80 |
| | 100% | 20.00 Billion |
| | === | ===== |

Source: SECOFI (Mexico's Department of Commerce and Finance)

Food production is found largely in or near the large urban centers, with approximately 50% of all production located in Mexico City and its surrounding State of Mexico, in Guadalajara, State of Jalisco and in Monterrey, State of Nuevo Leon. Any concentrated marketing or promotional program for the food industry would have to target these three urban areas first.

MEXICO'S FOOD INDUSTRY BY VALUE OF PRODUCTION BY LOCATION

| | |
|------------------------|------------|
| 1. Mexico City | 17% |
| 2. State of Mexico | 14% |
| 3. State of Jalisco | 11% |
| 4. State of Nuevo Leon | 7% |
| 5. State of Veracruz | 7% |
| 6. State of Chihuahua | 6% |
| 7. State of Sinaloa | 4% |
| 8. All other states | <u>33%</u> |
| | 100% |
| | === |

Source: SECOFI (Mexico's Department of Commerce and Finance)

Surveys of consumption habits show that as income rises so does the proportion of food intake related to meats, first, and then dairy products, followed by fruits. The increases come at the expense of cereals, vegetables and other products. Judging from the rapidly rising imports of meat products, as well as the surge in imports of dairy products, the population of Mexico has already begun the process of improving its collective diet.

Foreign food companies have been in Mexico for decades. The list includes most of the major U.S. food companies (Coca-Cola, PepsiCo, General Foods, Kellogg's, Campbell's, Kraft, etc.), and European concerns (Unilever and Nestle, for instance). More recently, specialized companies in specific industry sectors have entered the market through direct investment, joint venture or other distribution arrangements. Nonetheless, the Mexican food industry is in need of further foreign investments, particularly in distribution and merchandising. For many years the country's food industry allowed the government to dictate the market and this resulted in structural inefficiencies which are now built into the system. Foreign investment in the food system will provide the competitive means to make the Mexican market truly international.

At the retail end, it is estimated that almost two-thirds of all food products sold nationwide are channeled through small "Mom and Pop" stores and central markets. The large retail chains such as Gigante, Comercial Mexicana, Aurerra, Soriana and others which are more regional, have increased their shares steadily in the large urban centers. In the metropolitan areas it is estimated that the chains' share is over 50%. Their supermarkets and wholesale clubs are beginning to take on an American look in product presentation, cleanliness and general product availability. However, there are still operational differences which are peculiar to Mexico and should be taken into consideration when analyzing the retail food sector.

D. LAND HOLDINGS

In January 1992 the Salinas administration sent an agricultural reform package to Congress which included an amendment to Article 27 of the 1917 Constitution. It was this article which gave rise to the communal (or "ejido") land system after the revolution. Today about 54 percent of the national territory belongs to ejidos and semi-collective farms, and almost 66 percent of all arable land is in parcels of less than five hectares. Due to its emphasis on subsistence, ejido land is mostly dedicated to producing corn and edible beans.

The ejido system has come to be regarded as inefficient because farmers could not do anything with their land except cultivate it. They had no property rights, and therefore could not sell or mortgage the land for credit purposes or otherwise. Moreover, their incentives to improve the land were non-existent, so the latest technology was never understood or employed. Finally the continual land redistribution by the government did not keep pace with population growth, as the farming plots over the years have grown smaller and smaller, further promoting inefficiencies in the system. According to Nacional Financiera (NAFINSA), about 25 percent of Mexico's labor force, representing about 6 million farmers, was engaged in agriculture in 1990.

The 1992 reform package gave commercial farmers title to their land, allowing them to sell, rent or otherwise use their land as they see fit, including as collateral for loans. The new law also eased the limits on acreage, so corporations or associations of growers could cultivate larger parcels of land and achieve economies of scale. Although this reform package presents an excellent opportunity for Mexican agriculture to emerge from its historical constraints, there is a danger that displaced farmers will have difficulty finding new roles in Mexico's economy. A further aggravation of urban flight might occur, bringing more pressure to the already troubled major urban centers.

A special court has been designated to handle all issues related to the amendment. This "agriculture court" also is responsible for adjudicating conflicts which affect processing installations that are established on former government held land. It is not yet clear what responsibility limits have been applied to the court, but it apparently can sit in judgment on labor issues, corporate lawsuits and other matters. As the "agriculture court" does not necessarily rely on legal precedents in rendering decisions, foreign (and national) investors are wary of joint venture type relationships with landholders. Nevertheless, despite the risks associated with such legal uncertainty, the government is aggressively encouraging private sector investment in agriculture.

At present, Mexican law permits 100% ownership of agriculture related businesses, once the government "screens" and issues approval. However, foreigners cannot own more than 49% of land used for agricultural or livestock purposes. "Screening" has not been a problem in establishing food processing operations.

E. TECHNOLOGY -- INFRASTRUCTURE

Mexico has about 25 percent as much cropland as the U.S. (67 million acres as opposed to 328 million acres), but requires three times the number of farmers (about 6 million in Mexico versus 2 million in the U.S.). Canada has an estimated 280,000 farms with approximately 83 million acres dedicated to crops. As Canadian agriculture more closely resembles that of the U.S. in terms of technology and mechanization, it is safe to assume that Mexico lags far behind Canada as well in terms of production efficiencies.

Only about 30 percent of Mexican cropland is irrigated, so a large portion of the total is expected to remain planted to corn and sorghum. Approximately 20 percent of total arable land in Mexico cannot be worked using mechanized equipment due to topography; however, 40 percent of total land is worked using mechanized equipment.

Several regions in Mexico, depending on the crop, do enjoy an advantage over the other North American countries. This is particularly evident in the Bahio region (Central Mexico) where, due to higher yields and lower labor and plant costs, vegetables are produced very efficiently. Foreign companies have recognized the advantage and invested heavily in frozen vegetables, originating IQF frozen and packaged private label products in Mexico for the North American market. In 1991, total U.S. foreign investment in grains, food and related items amounted to almost US\$1 billion in Mexico (as opposed to US\$2.5 billion in Canada). Accumulated direct investment in all sectors of Mexico is over US\$20 billion, contrasted to US\$500 million by Canadian investors. Canadian investment in Mexico's agriculture is not significant at this point.

Infrastructure constraints, it must be noted, are the biggest problems now existing in Mexican agriculture. Not only are imports through border and port entry points affected by the inefficiencies within Mexico, but national production is more costly. In addition, in those sectors where Mexico has a decided comparative advantage (vegetables, fruits, melons and other horticultural products) a shortage of equipment plus the infrastructure constraints make it difficult to service export markets. When high prices for transportation, fertilizers and chemicals are added to generally lower labor productivity rates, the perceived advantages of lower labor costs are more than offset. Furthermore, lower yields and production per acre in crops particularly (with the notable exception of wheat, where the use of dwarf varieties almost double U.S. and Canadian yields) accentuate the effect of infrastructure constraints. Outside investors in Mexican agriculture have been careful to choose those areas where they can exercise a good measure of control in maintaining international competitiveness.

V. AGRICULTURAL POLICIES -- GENERAL

A. PRIVATIZATION

Most of the privatization efforts by the Mexican government have focused on state-controlled enterprises outside of the agricultural sector. Through the sale of almost 1,000 companies (the number of Mexican parastatals dropped from 1,155 in 1982 to 221 as of fourth quarter 1992), the Mexican government has generated almost US\$20 billion. The major sales have been the airlines, commercial banks, steel companies, mining companies, the telephone company, and various other large enterprises.

With regards to the agricultural sector, there have not been major events. The one exception has been the sale of the LICONSA dairy operations in Aguascalientes, Acayucan and Ciudad Delicias (representing capacity of about 2 million liters per day, or about 35 percent of total installed capacity in Mexico). In addition, the role of CONASUPO has been reduced gradually over time, with a free market focus allowed to direct agriculture markets. Prior to 1989 CONASUPO controlled the international trade and domestic commercialization of all of the basic foodstuffs in the country; however, the privatization of this service-oriented agency has been in the area of storage facilities and transportation equipment.

In the area of livestock and meat production, several national slaughter houses have been privatized, primarily the municipal facilities. As of December of 1992 the largest government owned facility was put up for sale (IDA in Mexico City) and a consortium of the national livestock association and an independent group of investors were proceeding to buy it (at this time the status of this sale is not fully known).

Perhaps most importantly in terms of impact, but not so noticeable with regards to financial effect, has been the privatization of regional laboratories and transport check-point facilities. The federal government has essentially handed over the ownership, use and maintenance of federal facilities in each state to producer groups to administer as they see fit. This affects how disease and pest control programs are enforced, which ultimately is reflected in productivity levels in both the agriculture and livestock segments.

B. FINANCING AND CREDIT

Government financing of agriculture and livestock production has been tightened. Prior to the Salinas administration, loans to the commercial farmers and even owners of privately held land were loosely contracted and generally not collected. In essence the loans for seed, fertilizer, irrigation and other inputs became part of the subsidy programs once they were considered uncollectible. The communal farmers, particularly, were treated favorably because of their political clout. It was not unusual for BANRURAL, the government agriculture sector lending agency, to continue to loan money each crop year to farmers who had not repaid loans from previous years. This has now completely changed, and government lending through BANRURAL, NAFINSA (the central bank) and FIRA (a government lending agency to small farmers) has taken on a more business-like approach. Under the restructuring of BANRURAL, any farmers with outstanding government debt are not eligible for future loans.

Financing and credit through the government have decreased as controls have been instituted and budgets are constrained. For the 1992/1993 fall/winter crop cycle FIRA interest rates for small producer loans were up slightly more than the prior year's difference in the T-bill reference rate. In January 1993, small producer loans had an interest rate of 16.37 percent (Banco de Mexico). The government's policy is to push this function towards the private sector, and so far they have not had much success, except in the area of export related crops. Prior to the privatization of the banks, the government could implement agricultural lending guidelines; however, since privatization the banks have not considered agriculture or livestock production as good investment risks. The key reason is the relatively low return found in agriculture and livestock production (or even up the product chain several steps into slaughter, oilseed crushing, milling, etc.). The banks were sold at a premium (in some cases, 3 to 4 times the asset value) so the shareholders are eager to invest where higher returns can be made in order to service debt. In addition, the government itself has provided a disincentive in the form of high short term treasury bill interest rates. The key reason behind the high rates is to attract foreign capital, and help control the balance of trade deficit through capital inflows (and also help control inflation). Unfortunately for the agri-business community in general the rates of return on treasury bills are not only higher, but less risky.

Capital goods investment for the agri-business sector has been increasing, but the general consensus is that trade credit or long term financing from foreign sources is the most important factor in these sales. Mexican banks are not presently in the position of making loans for expansion to small or mid-sized operations. Only the largest and best positioned companies are able to work closely with Mexican banks, and these companies are busily consolidating their market positions as weaker competitors retire from the scene. To some extent each agri-business sector is undergoing a "shake-out" in which consolidation is taking place. In the long run, however, this will benefit the Mexican economy.

C. PRICE POLICY/PRODUCER AND CONSUMER SUBSIDIES

Many federal agriculture policy programs have supported a self-sufficiency orientation in Mexico. Nevertheless, population growth and a strong economy indicate that increased reliance on imported products will continue throughout the 1990s, at least. The current approach therefore stresses "food access," regardless of origin, so self-sufficiency programs are not found in all production segments.

During the time leading up to the mid-1980s the government of Mexico developed policies designed to stimulate commodity production through price incentives and other subsidies. The government guaranteed that it would buy basic crops through CONASUPO at support prices. The support prices were adjusted twice per year (including adjustments for inflation). Government purchases maintained rural prices close to support levels, but the government is now considering a deficiency payment approach which would allow the market to set the final product price (this is discussed in greater detail in Section VII). The program also would allow crop acreage to be planted based on free market incentives, with the exception of the politically volatile crops of corn and edible beans.

Over the years the government offered input subsidies to encourage production and keep prices low. Input prices for services and products such as fertilizer, seed, credit, irrigation, electricity, fuel, and crop insurance have risen far less than crop prices over the last 30 years. Input use is still subsidized, but to a lesser degree than in previous years, and is expected to be even less subsidized in future years, reflecting the government's policy of allowing free market forces to drive agriculture and livestock production.

Retail price regulation has been important to the government's fight against inflation. It also has allowed the population masses to maintain some measure of control over its standard of living, at least with regards to the "basket of basic commodities". Retail prices for the "basket" are set and monitored by the government under a voluntary agreement between labor, industry and government known as PECE (Pact for Stabilization and Economic Growth). For many years, retail prices of basic food items were kept at low levels and this drastically reduced inflation. Over the past four years they have been allowed to rise closer to free market prices.

Corn is still the most subsidized commodity. While guaranteed support prices have been phased out for all primary commodities, corn (and edible beans) continues to be covered under CONASUPO. In addition to the price guarantee, which is well above world prices, corn producers have policies which a) control imports through permits, b) subsidize inputs such as credit, pesticides, fertilizers, crop insurance, irrigation, and electricity, c) provide fiscal supports, d) provide general marketing subsidies, and e) provide direct consumption subsidies for corn products through the corn flour subsidy and low income subsidy.

With the corn flour subsidy, CONASUPO makes up the difference between the cost of producing flour and the cost at which the flour is sold to tortilla manufacturers through

a direct subsidy to the flour producers. CONASUPO intervenes in the product marketing chain in other ways as well. As part of the governments' nutrition policies CONASUPO subsidizes the price of processed goods such as tortillas, flour and dough to low-income consumers through preferential prices. This equivalent to a food stamp program is extended to over 5 million people.

Price controls have historically been applied along the marketing chains for basic commodities. However, it was easier to regulate when CONASUPO was the responsible government agency for basic commodities, much as it continues to do today with corn. Now that the private sector is assuming the bulk of the market interaction, price controls at each segment in the chain are tougher to monitor. Notwithstanding recent public condemnations and jail sentences for leaders of an effort to increase tortilla flour prices, there is little that the government can do to eradicate the "parallel economy" for many of the basic products included in the "basket".

As discussed in detail in section VII, the new government agency in charge of support programs (ASERCA) is in the process of developing a new system based on planted acreage. This indicates that the government will continue its producer subsidies but, at the same time, encourage farmers to move towards those products for which each farmer believes he has some type of market advantage. When this policy is linked to the retail pricing policy designed to provide a basic food safety net for the masses, the government's overall approach towards subsidy and pricing controls is clear -- over the remainder of the 1990s Mexico will slowly gravitate toward an open market society.

VI. FOREIGN COMMERCIAL POLICY AFFECTING AGRICULTURE

A. TARIFFS

Below follows the existing tariffs on Canadian products entering Mexico, and what the anticipated policy will be under the NAFTA.

| <u>Product</u> | <u>Existing Tariffs</u> | <u>Future under NAFTA</u> |
|----------------------|--|--|
| 1. Barley | Import permit required | Tariff rate quota with a 10 yr. phase-out. 128% duty on imports over quota in first year. |
| 2. Corn | Import permit required | Tariff rate quota with a 15 year phase-out. 215% duty on imports over quota in first year. |
| 3. Dry Beans | Import permit required | Tariff rate quota with a 15 year phase-out. 139% duty on imports over quota in first year. |
| 4. Rice | 20% tariff | 20% tariff with a 10 year phase-out. |
| 5. Sorghum | Seasonal tariff of 15% for May 15 - Dec. 15 time period. Rest of year no tariff. | No tariff after Jan. 1, 1994 |
| 6. Soybeans | Seasonal tariff of 10% for Aug. 1 - Jan. 31 time period. Rest of year no tariff. | 10 year phase-out of 10% seasonal tariff. |
| 7. Wheat | Import permit required | 15% tariff with a 10 year phase-out. |
| 8. Beef | Depending on cut, tariff was instituted in late 1992 as "temporary". | Duty free upon implementation. |
| 9. Broilers | Import permit required | Exempted in agreement with Canada. |
| 10. Pork | 20% tariff on fresh chilled and frozen | "Sensitive" tariff-rate quota safeguard with a 10 year phase-out of 20% tariff. |
| 11. Fluid Milk | Import permit required | Exempted in agreement with Canada. |
| 12. Non-Fat Dry Milk | Import permit required | Exempted in agreement with Canada. |

- | | | |
|------------|------------------------|------------------------------------|
| 13. Eggs | Import permit required | Exempted in agreement with Canada. |
| 14. Cheese | Import permit required | Exempted in agreement with Canada. |

With the lowering and gradual elimination of trade barriers, business between Mexico and Canada is expected to grow. This growth should create a greater understanding and commercial relationship between the two countries, thereby creating a more harmonious business environment. The lessening of risk factors which accompany the increase in commerce should spur investments by Canadians in Mexico and possibly vice-versa over time. As Canada has established itself in international markets in crops, meats and dairy products it is expected to be a competitive force in Mexico with the implementation of the NAFTA.

B. NON-TARIFF BARRIERS

The barriers to entry for imported products are mostly related to environmental, health and safety standards.

Under the GATT talks several of the more contentious agricultural trade issues could be resolved (e.g., equivalency, pest-free regionalization, rules transparencies, acceptance of international standards, and heavier reliance on scientific evidence as the basis for action taking). In Mexico there has been a tendency to use border entry points as barriers by forcing delays and higher costs to the exporter. In addition, in the past arbitrary decisions have been made by federal government officials which do not meet the GATT standards for scientific proof. In the case of the U.S. some meat products and live animal shipments were considered by government officials to fall under this category of decision. Finally, Mexico does not have a binding arbitration approach to settling disputes such as what is being considered under GATT.

Aside from animal and plant health inspection issues which can be considered non-tariff barriers, labeling and registration issues can be problematical with regards to packaged consumer products. Import permit requirements for a wide range of grains and meat products are already well known.

C. INSTITUTIONAL AND STRUCTURAL ISSUES

Agricultural trade with Mexico annually accounts for less than 2% of each of Canada's total agricultural exports and imports. In 1990, for example, trade between the two countries amounted to 1.3 percent of the total agricultural trade of C\$ 2.308 billion. Wheat, canola and dairy products dominate Canada's exports to Mexico.

Mexico's import policy is primarily comprised of tariffs and import license requirements. Tariffs on bulk commodities are generally low, whereas higher duties are applied to processed foods and specialty items. Import licenses are more seasonally applied in order to protect domestic production during harvest periods. In some cases the availability of permits for importers is based on the amount of the crop purchased domestically. Potatoes and grapes are prime examples of horticultural products subjected to permits. Corn and NFDN also are subjected to permits. Some crops such as soybeans, sorghum and wheat are subjected to seasonal tariffs.

Mexico presently provides preferential tariff treatment to some member nations of ALADI (Latin American Association for Integration) and is negotiating with others. This can affect the price competitiveness of Canadian exports compared to ALADI nations. In the past Mexico has had bilateral trade accords with individual nations and has provided preferential treatment for Central American Common Market products. Under NAFTA Mexico will shift its focus to the other two member countries while continuing to develop bilateral trade accords with other Latin American countries. Mexico recently entered into a trade accord with Chile and is presently negotiating with other Latin American countries.

Phytosanitary requirements by Mexico covering imports of grain products have been streamlined over the past three years and are now essentially in line with GATT practices. This advance in trade relations is a result of the Mexican government's efforts to remove bottlenecks at border entry points, which in recent years have been unable to keep up with the surge in trade. On the other hand, Mexican authorities still retain the power to arbitrarily close the borders to imports for "infractions." Not surprisingly, there appears to be a higher incidence of border closings during import surges of specific products which have severe impacts on domestic production.

Over the last two years the most notable arbitrary (meaning without warning or immediate recourse) border closings have occurred in the livestock and meat product areas. Deciduous and stone fruits have been denied access on occasion, but there have been scientifically based arguments for blocking entry. In addition, Mexico closely monitors aflatoxin, requiring official certificates from countries of origin on grains such as sorghum. However, with regard to livestock and meat products, Mexico has provided what is widely considered less than acceptable scientifically based reasons for stopping imports. Although Mexican authorities have recently shown a willingness to work out problems prior to acting, exporters of meat products to Mexico weigh the history of such actions in making their business decisions.

Mexico continues to export live cattle to the U.S. for in-bond feeding and then imports them for slaughter. Under this program the cattle are still under Mexican ownership and carry an "M" brand. The U.S. applies sanitary requirements for disease and ticks and applies other regulations as well. This program allows Mexico to take advantage of lower U.S. feed costs and has to be considered a competitive advantage over Canada, which is at a transportation disadvantage.

The Mexican government has recently improved its border and port inspection services by making personnel changes. Grain, livestock and meat inspectors were "upgraded" and it appears that this effort has improved import procedures and allowed for a more orderly flow of documentation and physical product.

Other institutional and structural issues regarding transportation, distribution, financing and credit, subsidies, ownership and privatization, and how they influence foreign commercial policy, have been discussed in Section V. In addition, Sections II, IV, and VII contain information which provides background with regards to influences on Mexico's trade policy.

VII. AGRICULTURAL COMMODITIES - POLICIES, MARKETS, MARKET INSTITUTIONS, TRENDS

A. ANTICIPATED CROP SUBSIDY PROGRAMS

At present authorities are developing formulas which the Mexican government will apply to all crops. The plan now being developed by ASERCA (the government agency which is in charge of agricultural support programs) requires an analysis of international markets and their effect on Mexican agriculture in order to most efficiently distribute support to the sector. ASERCA is developing an approach to the merchandising of national grain which specifically, is more truly reflective of the influences of the international marketplace. They are trying to achieve this while allowing Mexican producers to immediately merchandise their crops at a specific price which does not require the national producers to incur any additional costs (or unfair competitive advantage) which may be created by the external market, at the moment of sale.

This approach is sustained by the budgeting and delivery of federal support payments in a timely and transparent manner. It is directed towards reducing the price differences with external product with respect to the costs of storage, transport and financing as well as other factors which create "basis" differentials. This will allow domestic product, once harvested, to compete on an international basis with foreign production. In order to develop this program the continuous monitoring of the following factors is essential:

- International prices for specified commodities
- International "basis" to entry ports of Mexico
- National "basis" from Mexican entry ports to destinations

In order to achieve proper monitoring the following information is required:

- a. Determine concepts and methodology for calculating price (cash and futures) and U.S. international "basis" for specific entry points in Mexico (border, Gulf ports, Pacific ports).
- b. Create methods for the practical application of theories, concepts, and methodology for the most important Mexican grains.
- c. Create historical data series so trends can be monitored.
- d. Create a support distribution model for grains which achieves the most efficient methods of support allocation by region, given certain restrictions

Determination of "Basis"

How the "basis" is determined is key to the effort. The commercialization model developed by ASERCA will assure the orderly distribution of national crops and will establish a specific level of income for the producer. In addition, it is expected to offer a certain uniformity regarding national and international "basis" prices which will help other participants up the product marketing chain.

At present ASERCA recognizes that Mexico has structural disadvantages with respect to international markets. Their basic costs of storage, financing and inland transport from producing areas to destination markets is uncompetitive. ASERCA is looking to improve this area of activity in order to better support buying decisions within Mexico's market. The new model(s) will provide knowledge of the national "basis" and its application to specific regions within Mexico. This will allow a specific region to consume agricultural products which it now produces at more realistic market prices due to production efficiencies and maximized use of its regional capacity, through the free market selection of products which are planted and harvested.

The system being developed by ASERCA, will determine the national "basis" and the implied costs associated therein, by taking into consideration product origins and destinations as follows:

| <u>PRODUCT</u> | <u>STATES OF ORIGIN</u> | <u>STATES OF DESTINATION</u> |
|-----------------|---------------------------------|---|
| a. Corn | Jalisco Mexico Puebla | D. F. Mexico |
| b. Edible beans | Zacatecas Durango Puebla | D. F. Jalisco |
| c. Wheat | Sonora Sinaloa | D. F. Mexico Puebla Gulf States Northeast States |
| d. Rice | Sinaloa Campeche Veracruz | D. F. Mexico |
| e. Sorghum | Tamaulipas | Jalisco Puebla Mexico Veracruz Sonora Nuevo Leon |

| | | |
|---------------|--|---|
| f. Soybeans | Sinaloa Sonora Tamaulipas Chiapas | Northeast States Jalisco Yucatan Nuevo Leon D. F. |
| g. Cottonseed | Jalisco Tamaulipas Baja California | D. F. Puebla |
| h. Cardamon | Tamaulipas Sinaloa | Northwest States D.F. |

Once having established the calculation of national "basis", the landed international prices for the products listed above must be calculated in order to determine the competitive position of the national crop. The origin prices must be at Chicago, Kansas or any other origin with a definable price. The international "basis", or the cost from origin to port, will be applicable to the following ports of entry in Mexico:

- a. Gulf Ports: Tampico, Veracruz, Tuxpan, Progreso
- b. Pacific Ports: Manzanillo
- c. Border Ports: Ciudad Juarez, Nuevo Laredo, Matamoros

Price Determination

In the price analysis effort a series of equations per product will be developed and monthly price estimates obtained. The fluctuation of price, international "basis" and other variables such as exchange rates, interest rates and inflation rates (both internal and external) will be included in the equation form. The two equations are as follows:

1. Cash price at origin = A + B * (futures price)
2. Cash price at Mexican Port or Border = (1.) + C * (international "basis")

Where:

- International Basis = F (B*, X1, . . . Xn) and
- B* = Price coefficient of futures prices with respect to cash price at origin
- X1 = Exchange rate

By adding to the above information the costs of handling domestic storage, duties (where applicable) and domestic freight, an international price at a destination point can be obtained. Once the delivered price is known it can be compared against the national support price, the difference being the anticipated deficiency payment which will be paid

by the Mexican government. This difference can be considered a deficiency payment. (See detailed explanation of this formula at the end of this section).

Based on this information monthly equations could be generated in tabular form using a presentation such as the one presented in Appendix E.

Grain Distribution Model

After arriving at the support payments required, ASERCA will develop a model for the distribution of product and the optimal approach for channeling the federal resources available to this effort. This could be achieved through a program which optimizes the commercialization process of a given product such as the distribution of the product from several different origins (whether internal or external) to destination points while guaranteeing its availability.

The distribution program will be supported by analysis and projections regarding the supply/demand relationship of any product. Consequently, the quantity of product needed to be imported (as well as the price), when it should be imported, and which entry points to destination points would be the most efficient choices would be identified.

The formulation of such a model will have to include the cycle of two harvests in certain grains which are part of the agricultural calendar year; however, the demand for these products is concentrated regionally. The freight factors, which are a function of distance from production/storage areas to destination points outside of the region, must be considered.

To determine which parameters are built into the model, and therefore the accuracy of the support payments for each product, the model must have certain restrictions such as:

- Regional production differences
- Regional consumption differences
- Imports

The characteristics of the model would ultimately identify the amount of federal support necessary to equalize national product prices with international product prices at a specific destination, at the same time guaranteeing the merchandising of all domestic product.

This is explained as follows:

- a. Minimization of Federal Support Payments [(Min AF = f (Pp,P*d,B)]

In order to maximize revenues to the producer, given a fixed federal support, the explanation is as follows:

- b. Max Y [Max Y = F (P*d, B, FS)]

Finally, the support payment to the producer would be maximized given a fixed federal support payment per planted hectare and a number of products to be determined, as follows:

c. $\text{Max } Y [\text{Max } Y = F (P^*d, \text{FS/Planted Hectares, Number of products})]$

Where:

| | | |
|----------------------|---|--|
| FS | = | Federal support payment |
| Pp | = | Price paid to the producer |
| P*d | = | International price at destination point |
| B | = | National "basis" (storage, freight, financing) |
| Y | = | Revenues to producer |
| F/S Planted Hectares | = | Fiscal support payment per hectare planted |
| Number of Products | = | Specific number of products |

The Development of the Federal Support Payment Model

At the core of the model to be developed is the recognition that a difference in price exists between national grain and imported product, calculated based on the following relationships:

- a. $P^*d = P^* (1 + D) + F^* + HC$
- b. $NB = CF + CT + CS$
- c. $Pdif = P^*d - NB$
- d. $FS = Pp - Pdif$

Where:

| | | |
|------|---|---|
| P*d | = | International price at destination point in pesos |
| P* | = | International price in pesos at the time it is sold (not at the time it is bought from the producer) |
| D | = | Duty (where applicable) |
| F* | = | International freight (including insurance) |
| HC | = | Handling costs to destination point |
| NB | = | National "basis" |
| CF | = | National financing cost created by advance payment to producers |
| CT | = | National transport cost from product origination to destination point |
| CS | = | National storage cost |
| Pdif | = | Price difference for buyer |
| FS | = | Federal support amount |
| Pp | = | Price paid to producer |

The equation (a) establishes the price of imported grain at a destination point, including financing costs in the international market place, duties and handling charges.

Equations (b) and (c) establish the price at which the buyer would be willing to pay the producer under free market conditions. This is arrived at by reducing the destination point international price by the following national costs: financing, transport and storage.

The fourth equation, (d), establishes the deficiency payment necessary to cover the producer and guarantee him his set price, plus assure the buyer that the price at which he buys is equal to that of imported product.

Further definition of terms used in this formula are as follows:

International price at origin - this refers to future prices quoted at the close of business on any given day at the Chicago Board of Trade (or other exchange, as appropriate). The average monthly price for the previous month per contract will be used for the month in which the national product is "consumed". For example, for a purchase realized in the month of August, the international price at origin will be the averaged close of day prices for August futures observed during the month of July.

International Basis - This includes freight and insurance from Chicago to port or border. This factor will be revised monthly according to the international market.

Handling Charges - Includes administrative and handling charges and will be a fixed price by ASERCA.

Domestic Freight - Cost of transport by truck or rail from port or border to destination point. This cost will be changed twice per year.

National Basis -

- a. Storage Costs - In and out changes plus monthly storage will be set by ASERCA.
- b. Financing Costs - Will be the same as what ASERCA offers buyers (28 day CETES + 3%, subject to revision).
- c. National Freight - Takes into consideration various freight costs by truck or rail from production areas to destination points. This cost will be changed twice per year.

Final Comments

ASERCA is mainly involved in agricultural products, so for the purposes of this analysis their model will be applicable to corn, wheat, barley, soybeans, rice, sorghum and edible beans. They intend to begin phasing in their support payments by the fall/winter harvest of 1993.

It is understood that the Ministry of Agriculture (SARH) is closely monitoring the prices of beef, pork, and chicken as a part of the government's inflation fighting initiatives. To the extent that feed prices are lowered through the aforementioned plan, the government's drive towards single-digit inflation will be enhanced. There is therefore a significant effect on livestock costs of production embedded in the ASERCA plan to allow grain prices to Mexican buyers to be subjected to free market forces. This will most assuredly lower the price of feed in the country.

B. OUTLOOK ON MARKETS AND MARKET INSTITUTIONS

Canadian officials have stated that one of their primary reasons for participating in NAFTA is to protect the country's position in CUSTA. However, the fast growth of the Mexican economy and its market potential for Canadian agricultural products are now becoming more interesting, relative to several years ago, to the government and private industry sectors.

At present, Canada's direct foreign investment and trade with Mexico is relatively small when compared to that of the U.S. Since the beginning of the Salinas administration opportunities have arisen in many feed and food segments of Mexico's agribusiness sector which have made the country a more attractive opportunity for trade and investment. SCI regularly monitors agricultural activity in Mexico, and our most recent country analysis is predicated on several country assumptions, as follows:

- Price inflation as measured by wholesale prices should be up at a 15 percent rate in 1992. Inflation in 1993 is forecast to decline to a 10 percent rate and then drop to an 8 percent rate of inflation during the 1994 through 1997 period.
- Population increases at a 2 percent rate during the forecast period.
- The value of the Mexican peso relative to the U.S. dollar is devalued at a 2 percent rate during the next 5 years.
- Treasury bill interest rates are assumed to average 15 percent this year followed by a decline to 13 percent next year, 12 percent in 1994 and 11 percent from 1995 to 1997.
- The Mexican economy is expected to remain strong during the course of the forecast. Gross Domestic Product growth in 1992 was the slowest since 1988, lower than 3 percent. Most of this decline is due to the economy running into capacity bottlenecks due to the lack of investment in capital equipment and infrastructure during the 1980s. Because of these bottlenecks, excess demand has pulled prices higher at a faster rate than the government had expected at the beginning of the year. The country is in the midst of a capital spending boom, however, in an effort to modernize industrial production processes. Since most of the goods necessary to support this rebuilding process are not available inside the country, the trade deficit has ballooned as imports of capital goods have far outpaced a steady growth in export volume. As more of the capital spending activities run their course and infrastructure changes are put in place, the economy should be able to move beyond the existing bottlenecks and move to a higher levels of aggregate growth at lower levels of inflation. The trade deficit problem should also begin to recede as exports can grow at a faster pace while domestic demand can probably be met by higher levels of domestic production. Given this baseline scenario, the demand for higher value food products such as meat, poultry and further processed food products looks to be very bright.

- NAFTA will be ratified and implemented.

1. Crop Area and Production

- Mexico's area of major crops for 1992 was only slightly below the prior year and continued historically high. For 1992, the crop mix showed a pronounced swing into corn and dry beans and out of wheat, sorghum, oilseeds and cotton. Due to changes in Mexican farm policy, only dry beans and corn continue to receive government support payments.
- Larger 1992 corn and barley area more than offset a drop in sorghum and kept total feedgrains at just under 9 million hectares. Total feedgrain area was 1.5 percent over the prior season. Corn area at 7.9 million hectares was up 200 thousand hectares from 1991.
- Poor weather last fall at planting time cut 1992 winter wheat area sharply. Additional spring wheat area was shifted to corn which still has government price supports. This reduction along with a small decline in rice area combined for the smallest foodgrain total since the early 1980s.
- Reduced government support for oilseed crops caused farmers to switch out of soybeans. A sharp cut in cotton planted area due to low prices and an additional drop due to poor harvesting weather more than offset increases in other oilseeds. Overall, 1992 oilseed area declined by 35 percent.
- Dry bean area for 1992 expanded nearly 3 percent as high support prices were sustained.
- The five year forecast, which assumes the implementation of NAFTA, points to a stable total crop area of 12.2 to 12.4 million hectares. Several changes are noted within the crop mix. Corn area is expected to remain near recent levels of 7.9 million hectares or grow slightly larger to 8.1 million hectares, depending on what farmers do regarding wheat acreage. Continued government support will help to sustain corn area, but the major gains in acreage planted to corn have already occurred. The recent low historical levels of wheat are expected to be sustained as land is switched into corn and high value export crops such as fruits and vegetables. Dry bean area projects to expand modestly under continued government support. The oilseed sector will continue to contract as government support dwindles. Scarce water resources currently used for soybean production likely will be transferred to the production of high value export crops.
- Crop yields in Mexico are highly subject to weather-related variation as only a modest percent of arable land is irrigated. The bulk of production for corn and dry beans is rainfed. Crop yields are projected to sustain uptrends in line with recent historical trends. No major technological breakthrough is anticipated to unexpectedly boost yields. The expected trend growth will come from more

intensive use of inputs on the more productive land and continued adaptation of improved technology overall.

2. Foodgrain Supply and Use

- Mexican wheat production is projected to trend lower during the forecast period. The primary cause is expected to be a reduction in crop area. The continued decline in government support for wheat production will result in area shift to high value export crops, particularly in locations where wheat production must be irrigated.
- The Mexican government appears willing to allow expansion in wheat imports to meet growing food demand. The increase in wheat imports to a record 1.65 million tonnes during the current crop year at a time when U.S. wheat prices are up 20 to 30 percent during the last three months makes a strong statement that Mexico is dedicated to improving the diet of the country.
- Increasing population and the shift to more prepared and fast food items in the Mexican diet project to allow wheat food demand to expand by 5 to 6 percent over recent levels during the next five years. Feed use is expected to be flat at about 500 thousand tonnes annually. Reserve stocks are expected to be maintained between 250 to 400 thousand tonnes during the forecast.
- Wheat imports by Mexico are projected to drop back from current record levels, but remain between 1.1 and 1.5 million tonnes over the next few years, a level that is still higher than imports were during the 1980s. This assumes that Kansas City wheat prices will stay near \$3.50 per bushel and a slow rate of peso devaluation will take place.
- Mexico is expected to continue to produce a small quantity of rice, 190 to 200 thousand tonnes, milled basis, annually. Due to its high water use and the reduction in irrigation subsidies, rice production is shifting out of traditional irrigated areas to more southern and eastern sections where rainfall is more abundant. Domestic use is projected to expand in line with population growth, thus an increasing level of imports appears necessary to sustain per capita consumption. Current projections suggest annual rice imports of 250 to 300 thousand tonnes.
- Corn is used primarily for food in Mexico, but is reflected on North American balance sheets as a feedgrain. The NAFTA will allow duty free importation of 2.5 million tonnes of U.S. corn with annual increases of 3% in the duty free volume. Corn imports will be driven by the 13 percent increase in corn usage. Mexico should have little problem satisfying its NAFTA quota for corn imports and will easily exceed these minimums if meat production increases as expected.

- The expansion of population within Mexico and trend increases in per capita consumption of corn point to food demand increasing from the current 13.8 million tonnes to 14.8 million tonnes by 1997. Expansion of livestock feeding activities will add another 1.2 million tonnes to corn feed demand by the end of the forecast.

3. Feedgrain Supply and Use

- The NAFTA agreement was signed by the three countries' heads of state on December 17, 1992. The seasonal tariff on grain sorghum is immediately eliminated as of January 1, 1994.
- Expansion of livestock feeding activities will add another 1.2 million tonnes to corn feed demand by the end of the forecast.
- Government reserve stocks are projected to be held near the 1 million tonne level to cover unexpected demand growth and/or weather-related production problems.
- Sorghum use will continue to trend upward as livestock and poultry feeding activities continue their expansion. By 1997, domestic use of sorghum is expected to total 8.0 million tonnes. The Mexican government will apparently continue its policies of reduced support for sorghum production. Under terms of NAFTA, tariffs will be eliminated immediately. The result should be a continued high level of imports to supplement a 2.2 million tonne annual production. Imports are projected to increase from 5.5 million tonnes in 1992 to 6 million tonnes by 1997.
- Expanding consumption of barley and oats from both food and feed use are likely to bring some increase in imports. The current forecast is based largely on trend population growth, with relatively flat per capita consumption levels for these two grains.

4. Oilseeds Supply and Use

a. Soybeans

- The NAFTA agreement, which was signed December 17, 1992, calls for Mexico to reduce its 15 percent seasonal duty on soybeans to 10 percent. This duty will then be phased out over 10 years.

- The oilseed complex is highlighted by declining production due to changing domestic support policies and a rapidly growing protein consuming livestock base. The elimination of the seasonal duty on soybeans and projected growth in livestock production both point to an increase in imports of oilseed products, particularly protein meals.
- Area planted to soybeans is projected to remain constant during the forecast as the opposing forces of continued strong demand and reduced support for soybean production work against each other. Mexico's climate is not particularly suited for soybean production. Production was made profitable through government subsidies for inputs, particularly access to irrigation water, which until the 1990 crop year was cheap. The curtailment of this support in the past two to three years has resulted in the shift of considerable area out of soybeans into other crops, especially in the Northwest states of Sonora and Sinaloa.
- Exceptional growth is projected for the pork and poultry sectors as economic growth continues and incomes expand. The projected expansion in livestock numbers suggests a healthy expansion in soybean and other oilseed crush during the forecast. Current projections for the soybean crush show it growing to the range of 2.5 to 2.7 million tonnes. In order to achieve this crush level, soybean imports of 2.1 million tonnes would be required to supplement domestic production.
- The soybean meal sector projections point to feed demand expanding to levels higher than the 2.6 million tonnes required in 1992. Projected demand from feeding will require higher soybean meal imports in the coming years. 1992 imports were about 500 thousand tonnes. The soy meal tariff that is currently 15 percent is slated to be phased out over the next ten years under NAFTA.
- Soybean oil demand is projected to increase by about 10% over the next five years. An increased level of imports would also be necessary to meet forecast consumption.

b. Canola

- Mexico does not produce any canola domestically. Imports of canola, canola meal, and canola oil all are projected to expand dramatically during the next few years. Canola imports are forecast to be up in the near future. Canola meal consumption is expected to increase to 260 thousand tonnes from the current 175 thousand by the year 1997. Canola oil use is forecast to expand to 363 thousand tonnes, an increase of 40 percent from current consumption levels. The current projections imply that a larger portion of expected canola oil demand will need to come from oil demand rather than meal demand.
- In recent years, Mexico has become a significant importer of canola and canola sub-products. A primary source has been Central Europe. Under NAFTA, it appears the Canadians may be able to gain the edge in a growing market, but its

canola exports to date have been erratic. EC and U.S. export programs have competed effectively against Canadian canola exports; however, under NAFTA the Canadians should find a more level playing field to compete on.

- Canola imports are expected to grow slightly, depending on the attractiveness of prices compared to other oilseeds and export incentives provided by major producing countries. The consumer in Mexico prefers finer oils to soybean oil, and this is a plus for canola, sunflower seed, corn and other oils which can be blended.

5. Dry Beans Supply and Use

- Dry bean production is assumed to remain supported by the Mexican government throughout the forecast period. This will support increased area and will help to sustain production near the 1.0 million tonne level.
- Beans will remain a diet staple. Both population growth and a small increase in per capita consumption rates point to recovery in domestic use. The projected 1997 domestic use of 1.35 million tonnes is back in the vicinity of use levels experienced during the early 1980s. However, the forecast consumption implies steady to up trending imports to sustain consumption and maintain reserve stocks.

6. Overview of the Mexican Meat Complex

- Land reform is the cornerstone of the Salinas Administration agricultural policy, and it embraces privatization as the vehicle to production efficiencies up and down the product marketing chain, which will eventually make Mexico competitive in world markets.
- The Mexican meat industry is undergoing profound structural adjustments in response to the competitive requirements of international markets.
- Until minimal industry efficiencies of scale are realized and costs of production are reduced to world levels, the Mexican meat complex will remain at a competitive disadvantage and imports will increase.
- Imports of all meat products during the last two years have surged; live animal imports have increased as well. Recent tariffs and quota impositions have controlled the surge.
- Beef has historically been the meat with the highest per capita consumption; however, there is a notable trend towards poultry, and to a lesser extent, pork, consumption rather than beef or lamb.

- Slaughter facilities in Mexico are generally inefficient when compared to industrialized countries and this creates additional cost burdens which counter other advantages such as cheap labor.
- Slaughter facilities are being forced away from heavily populated areas such as Mexico City, Guadalajara and Monterrey and are relocating in areas closer to production.
- Foreign companies are beginning to establish marketing and production beachheads in Mexico through joint ventures and, in a few cases, outright purchase of facilities (such as vacated slaughter houses for their refrigeration and storage capacities).

7. Logistical Factors in the Mexican Meat Complex

- The transportation and distribution infrastructure is undergoing a period of renewal after a long history of government control and mismanagement; privatization initiatives are underway in the rail, motor carrier, port and storage sectors which are now a drag on the orderly movement of meat products.
- New programs for toll roads, rail bed refurbishing and port facility improvements are slowly providing more efficient service, but the infrastructure is still lagging behind the increasing demands created by the surge in economic growth.
- The use of motor carriers to transport frozen, fresh and packaged meat products far outpaces the use of rail.
- Government regulations have created significant delays at border crossings, at times purposefully as a response to import surges.
- Mexican ports are not well equipped to efficiently handle container traffic, and, due to the lack of cold storage facilities, are limited in their break-bulk capabilities as well.
- In addition to normal port delays caused by congestion and take-away capabilities, new meat sample testing regulations are creating logistical problems; claims have been made by the trade that the new testing requirements are in effect non-tariff barriers erected by their government to control imports.
- The majority of meat products sold at retail are handled by "Mom and Pop" operations, convenience stores and central markets; the large grocery chains, however, are increasing their retail share primarily due to better distribution and storage capabilities.
- The majority of meat products are sold fresh due to a nationwide lack of refrigeration capacity, and this marketing hurdle will continue to exist for all meat exporters until new cold store capacity is made available.

8. Regulatory Practices in the Mexican Meat Complex

- The technical capability of the Mexican government to carry out animal health inspection services is severely limited, and this is having a direct effect on how the Mexican government establishes trade policies with regards to meat imports.
- Over the last two years tariffs have been imposed on beef and pork products, and a quota system is in place for poultry meats. Live animal imports also have restrictions through tariffs and/or restraints on their ultimate use (e.g., slaughter only in Federally approved facilities).
- The requirements for sample testing of all meat imports, as well as "organoleptic" tests randomly performed by health authorities throughout the distribution chain, have effectively curtailed imports and created complaints in the trade about non-tariff barriers.
- Retail price controls for low quality beef, pork, and poultry are in place; however, the 1992 surge of imports (until "barriers" were erected) have kept market prices below the control price, so that it is presently not a factor.
- The GATT deliberations have surfaced in the negotiation of the NAFTA, and could benefit exports through the acceptance of new standards codes which are applicable to the international meat trade and create transparencies between the Mexican and exporting country systems, in addition to creating a scientifically based conflict resolution mechanism.
- The Mexican system of land tenure has also led to the division of much arable land into inefficiently small plots--to the point where many plots are five hectares or smaller; this continues to create inefficient feedgrain production and higher costs of grains and other by-product inputs to the livestock sectors.
- In 1991 President Salinas proposed constitutional and other changes to reform the structure of agricultural production, and specifically land tenure, in Mexico. This will, when fully implemented, recognize all forms of property and privatize Mexican farmland. Combined with the NAFTA and other trade liberalization measures by Mexico, this will result in more efficient livestock and feedgrain production operations as well as better access to foreign feedgrains.

9. Cattle/Beef Supply and Use

- Demand for beef and cattle for most of 1992 improved from the levels that existed in 1991. Beef demand is relatively high and is showing little sign of being held back by lower prices for broilers or pork. Steer prices were up 8 percent from 1991 while per capita supplies were up 1-2 percent.
- The high 1992 prices for cattle prompted a higher level of cattle slaughter relative to existing inventories as producers marketed cows and heifers instead of holding them for breeding purposes. Cattle inventories are growing slowly due to the high slaughter rate of breeding stock.
- Steer prices in U.S. dollar terms averaged about \$85 per hundredweight in 1992.
- The Mexico government initiated tariffs ranging from 15 to 25 percent on cattle and beef in November in an attempt to stem the flow of imports from the U.S. The higher beef and cattle prices are also a threat to the stated goals of the Mexico government towards bringing price inflation to the lowest level possible. The higher levels of imports have been a factor helping to create a better balance between available beef supplies and beef demand. NAFTA and inflation concerns are expected to lead the Mexico government to rescind these recent tariffs by late 1993.
- Lower feeder cattle prices in the U.S. in 1992 reduced the flow of feeder cattle moving from Mexico to the U.S. This downward trend in feeder cattle exports to the U.S. is expected to continue in the near future due to expanding supply of feeder cattle in the U.S. which is expected over this time period.
- Risks to any forecast come from the untested (as of yet) upward potential for beef demand. Steer prices in 1993 are forecast to increase by 4 percent from 1992, half the rate of increase seen in 1992. The slower rate of cattle price inflation is in response to a higher level of beef production. If cattle prices continue to move up at an 8-10 percent rate in the face of larger supplies, cattle inventories will move upward during 1993 and 1994 instead of leveling off and declining.

Other Market Observations:

- The U.S. has historically dominated the live cattle trade into Mexico.
- During the 1980s Mexican imports of beef offals were much larger than imports of higher quality beef; however, in the late 1980s and early 1990s, as Mexico undertook economic reforms, Mexican imports of higher quality beef overtook imports of beef offals.
- The most striking trend in beef imports in recent years has been the change in the composition of imports: on the meats side, imports have increasingly consisted of higher quality beef rather than offals.

- Key factors leading to higher imports appear to be trade liberalization, increasing purchasing power among the Mexican public, and the basic fact that foreign product has been price competitive.
- The Mexican beef industry is not internationally competitive and will therefore not be much of a factor in foreign markets.
- Mexico is competitive in producing feeder cattle for sale into the U.S. market; however, Mexico is uncompetitive at feeding out cattle.
- U.S., EEC and Australian beef proved themselves highly competitive in the Mexican market particularly with regards to beef carcasses and boneless beef. This resulted in the imposition of high tariffs for beef products in late 1992, with a relatively higher tariff (5%) on EEC and Australian imports than on imports from the U.S.
- The U.S. had been shipping carcasses into Mexico, but there was a significant shift toward Mexican imports of U.S. boxed beef, sold as boneless and trimmed rounds and chucks. This was before the new tariffs.
- Calculations show that U.S. boxed beef as well as Australian boneless, manufacturing grade beef would be price competitive in the Mexican market if not for the tariffs. Under free market competition in the NAFTA, beginning in 1994 the beef market will undergo significant competitive pressures from imports.
- Mexican cattle producers have been constrained in their operations by the government and are considered inefficient; cattle producers have been legally limited to a maximum herd size of 500 head, and those who have tried to expand operations or improve facilities have faced the possibility of government confiscation of their property, under historical land tenure regulations, and this has resulted in inefficient sizes and undercapitalization of ranch lands.
- One further drag on Mexican cattlemen's competitiveness versus North America and other imported product coming into Mexico is the inefficient manner in which Mexican cattle move along the marketing chain. It has been noted that at least 4 and as many as 12 middlemen can be in the marketing chain between a particular live cattle producer and the ultimate beef consumer. Beef importers, though, can often supply product directly to retailers and restaurants.

- The total size of the Mexican cattle herd, which was negatively affected by drought in the late 1980s, has now recovered to near its previous level. The herd is expected to keep growing over the next couple of years, but stable cattle and beef prices, caused by the substitutability of low-priced chicken and the availability of imports, could cause Mexican cattle inventories to turn downward again for the remainder of the decade. Much depends on the ratification and implementation of NAFTA.
- A weakness of real, inflation-adjusted prices for cattle and beef in Mexico when compared to the U.S., could keep live cattle imports in check, but under this situation feeder cattle exports to the U.S. will continue to trend upward. Imports of beef into Mexico will continue upward once (and if) tariffs are removed or reduced, but will be moderated by Mexican real prices for beef. As a result, per capita consumption of beef is expected to peak in the mid-1990s but then turn downward, although the per capita level will still be higher in the year 2000 than it was in 1991.
- The broiler chicken industry is turning into the driver of the whole Mexican meat complex. In fact, although more beef is currently consumed per capita, the per capita consumption of chicken meat is expected to exceed even beef consumption by the end of the decade.
- Per capita consumption of pork will remain about midway between beef and chicken consumption on the one hand and sheepmeat consumption on the other.

10. Hogs/Pork Supply and Use

- Pork demand was disappointing in 1992. Hog prices declined from 1991 while per capita pork supplies increase by 0.6 kilograms. Normally, the rising price of beef would provide some support for pork and hog prices, but that has not been the case in 1992.
- The hog production sector is in the process of restructuring toward larger, capital intensive facilities and this trend is expected to continue into the foreseeable future. Flat pork demand will be the biggest factor limiting the expansion of the industry.
- Slaughter hog imports from the U.S. will be limited by strict enforcement of animal health regulations, similar to what has been seen in 1992. Hog imports in 1992 were down 60 percent from the previous year.
- Pork imports were up 50 percent in 1992 and are up 300 percent from 1990 levels. Attractively priced pork variety meats in the U.S. market spurred much of this import demand. Pork imports are forecast to grow at about a 10 percent rate in each of the next two years before stabilizing in the following years.

- Hog inventories are forecast to grow about 10 percent in the next 5 years while hog slaughter increases by 20 percent. The accelerating expansion in hog slaughter relative to inventory numbers reflects improving efficiencies by hog producers. Short term interest rates that stay below 15 percent are a key assumption for this forecast.

Other Market Observations:

- The hog and pork sector has suffered through major production swings. During the late 1980s significant depopulation took place as disease concerns and falling demand pushed prices down. In recent years the industry's herd increased and is expected to continue a steady growth over the next few years.
- The major expansion has occurred in the Northwest states, where the latest technology, disease control (primarily against hog cholera), better genetics, better feed formulation, and other efficiencies of scale are being realized.
- Mexican hogs are generally smaller than U.S. hogs when taken to slaughter. Subsequent meat products reflect the size difference, particularly in hams and loins, and this poses a problem for exports of product into the market. Mexican consumers believe national product has more color and prefer it. The smaller hog preferred by Mexico may be a competitive advantage for Canada, as its hogs tend to be lighter than those of the U.S. as well.
- There is no price premium paid for loins such as exists elsewhere in North America. There is a higher relative price paid for hams, and this is higher than that paid for loins. However, due to health regulations, only cooked product can be shipped from Mexico, thereby eliminating the opportunity for two way trade to take advantage of this market situation.
- Under NAFTA, Mexico's Northwest producers and processors are hoping that U.S. APHIS officials will recognize their region as disease-free and allow imports from there. The exports would most likely target the large Mexican population of Los Angeles. Under GATT the issue of disease free regions has been accepted.
- There are presently about 25 TIF (Federally inspected and approved) hog slaughter facilities in Mexico. This number is climbing as more inspections are requested. Imported live hogs for slaughter can only go to TIF plants.
- There are strict expansion restrictions on slaughter and processing facilities in urban areas of Mexico in response to environmental concerns.

- As in the other meats, distribution and refrigeration facilities are key components to getting market share. U.S. pork product exporters are looking for established distribution networks, through which they can "piggyback". However, branded U.S. product and vacuum packaging are receiving slow acceptance.
- Pork offals are the biggest import items. Anything cheap, including items such as salivary glands, that can be used in low protein "popular" hams is imported and processed. Turkey meat is also combined with pork offals in hams and frankfurters.
- There is a seasonality factor, with more pork consumed during the August - January six month period than during February-July. This factor is reflected in imports.
- There is a 20% duty across the board on most meat products with the exception of breeder stock. Cooked and cured hams carry a 10% duty. However, "technical" contraband and other invoicing schemes are common at border entry points.

11. Broiler Supply and Use

- Broiler prices were depressed for most of 1992 by an 11 percent increase in broiler production. Broiler prices remained below profitable levels for most of the year. The industry is in the process of restructuring towards more vertical integration, similar to the U.S. broiler markets. The industry is expected to continue to expand at a similar rate in 1993 as operating efficiencies favor larger operations that are focusing on gaining a larger share of the market.
- Broiler imports in 1992 were up 30 percent but this rate of expansion should begin to slow in the next two years as the domestic industry becomes more efficient at controlling marketing channels.
- Poultry producers are concerned about the growth in imports and are considering the implementation of tariffs on U.S. poultry products instead of the quota system that currently exists. Various schemes have been prepared for 1993 and in the case of NAFTA is not implemented. Based on NAFTA, a 95,000 tonne TRQ will be applied, with an over quota tariff of 133% for turkey and 260% for chicken. The current forecast suggests that the increasing efficiencies to be seen in the market during the next two years will make current tariffication proposals less meaningful.

Other Market Observations:

- Per capita consumption in the meat complex is expected to grow by 5.5% to almost 45.36 kg in 1993. Broiler consumption will slightly exceed this growth rate in 1993 and will jump almost 7% in 1994 in a relative slower growth year for the meat complex. According to Mexico's National Association of Poultry Producer's (UNA) per capita consumption of poultry meat is 16.01 kg. (This is higher than the USDA figure of 11.34 kg.)
- The red meat sector presently has more structural production and processing restraints than the poultry industry. There is a good opportunity for poultry consumption to continue to outpace the other meats and gain greater share in a meat complex which is growing, if the poultry sector shows greater flexibility in meeting the demands of the consumer. From 1989 through 1992 production increased 54%.
- The industry is consolidating and the rate of consolidation accelerated in 1992 due to overcapacity, imports and low prices. About 20 companies were forced out of the industry in 1992 which represented 5%-10% of installed capacity. Prices are now rebounding even though production is expected to increase a moderate 4%-7% over last year.
- The Central region of the country contains 70% of all consumption, is the most diversified market and represents the best opportunity for a competitive poultry processor. The North consistently has lower margins and the South does not have attractive demographics. The Central region is defined as San Luis Potosi South to the latitude in the Morelos/Puebla boundary.
- Mexican costs of production are at minimum US\$0.22/kg higher than U.S. integrated producers due to higher feed costs, lower conversions, disease, lack of automation and relatively weak production management skills. Those companies making adjustments to narrow the difference in production costs will have an automatic advantage in the Mexican market.
- An efficient distribution network is essential for success. Refrigeration equipment for transport and storage is becoming increasingly important. At present, distribution is a major weakness in Mexico's product marketing chain and needs to be totally overhauled. Companies which are focusing on this problem will be at an advantage to the competition.
- The trend is away from commodity type N. Y. dressed birds and towards value-added products such as rotisserie chickens and supermarket cut-ups. This is particularly the case in the Central region.

- In 1992 the greater part of the total product marketing chain margin was captured by the retailers. Prior to 1991 it was more equitably divided with producers. This has pushed producers to focus more on value-added products in order to increase margins.
- There are four, possibly five, top companies which will continue to gain share, possibly reaching a combined 50% of the market in the next two to three years. Smaller family operations leveraged by banks will endure only as long as the banks are willing to accept losses or low returns such as being experienced now.
- U.S. based companies operating in Mexico have access to known formulas for success in the very competitive U.S. market. The Mexican market is expected to gravitate towards the structure now in place in the U.S., particularly in the large urban areas. The ability to leverage product knowledge and production/distribution technology in a responsive opening market, plus having access to lower capital costs, will place foreign-based companies in Mexico at an increasing advantage over the competition.
- The Mexican consumer is slowly changing his purchasing habits and is becoming more quality and service conscious. Purchases of fresh cut-up products at retail, prepared items such as rotisserie chickens and fast-food will experience greater growth over the next two years at the expense of the position now maintained by whole birds. Mexican companies in position, and flexible enough, to adjust to the "Americanization" of the Mexican market will gain share and increase profitability through these value-added product sales.
- At present there is only a small price premium paid for breast meat over dark meat in the Mexican market. This will change modestly over the short term, but over the long term the price differential is expected to widen. By the year 2000 the pricing differential is expected to be closer to 50% of what will exist in the U.S. market.
- The poultry industry will continue to be at a disadvantage to imports primarily because of high feed costs and health regulation restrictions on exports of uncooked product back to the U.S. (where the breast meat premium could be captured). However, UNA and other industry associations have been able to work with the government to limit the flow of product imports and create greater access to cheaper feed grains, both national production and imports. A continuous dialogue with the government has been established, and as long as the poultry industry works within the inflation-reducing parameters desired by government, it should be able to control the negative effects of import product surges into the market.
- Government interference through price controls has been neutralized by market competition which has kept prices below government required levels.

- 1992 marked a year in Mexico when there was some measure of market stability in the whole meat complex. This, in part, created the "shake-out" in the poultry industry. Over the next two years the industry is now positioned to return to profitability barring any major surge of imports in any one of the meat sectors.

12. Dairy Supply and Use

- Although fluid milk production is expected to increase in 1993 due to an increase in the herd, favorable weather and the decontrol of fluid milk producer prices, there will still be a considerable shortfall. The government is encouraging producers and processors to enter into long term relationships, particularly in the South where production is seasonal, and is in the process of developing useful market information and official standards (which are surprisingly lacking).
- NFDM (non-fat dry milk) is being imported at prices which dairymen believe are unfair and reduce fluid milk prices, a claim which has fallen on deaf ears.

Other Market Observations:

- The industry is undergoing structural change under a market-oriented environment and competition from imports. Productivity is slowly improving as least efficient producers leave the sector.
- Fluid milk consumption continues to grow faster than production. This has resulted in increasing imports of non-fat dry milk (NFDM), which should remain at high levels despite increased domestic production. NFDM imports could reach 250,000 tonnes this year, whereas local production of NFDM is only 15,000 tonnes.
- 55% of Mexico's milk production comes from approximately 15% of the dairy herd which is managed under confined dairy systems. Most of these advanced dairies are found in the North or in the Central regions of Mexico. Semi-confined systems account for 15% of total production, and the remaining 30% is derived from lactating beef cattle. This last group, on average, produces about 10% of what each cow produces under a confined system.
- 45% of Mexico's milk production is consumed raw by local inhabitants. The 55% which remains is sold to dairies and other processors and only about 20% is pasteurized.
- Chilled milk commands a premium price, but only about 25% of total fluid milk is chilled.

- About 50% of raw milk consumed locally goes into home-made cheese and is not marketed through normal channels. Cheeses are valued for their lack of need to be refrigerated.
- Dairy operations are now caught in a price squeeze between government dictated farmgate prices and controlled retail prices. This is expected to continue for the foreseeable future. In the North, U.S. fluid is being imported with a 10% ad-valorem tax and allowed to be sold at free market prices.
- Logistical problems reduce the competitiveness of fluid milk imported through border points as the product moves further south. Refrigeration facilities are not readily available.
- Due to price controls dairy processors are moving towards producing value-added products such as ice cream and yogurt, and to a lesser extent cheese (now that domestic supply and imports have dampened the growth in cheese prices).
- Milk production in Mexico is seasonal, depending on the availability of water during their rainy and dry seasons. This creates production dislocation regionally and increases the importance of NFDM availability.
- Purchases of NFDM are still handled by CONASUPO under license. Of the possible imports of NFDM for 1993 of 250,000 tonnes, approximately 100,000 tonnes will go to the private sector and the rest to LICONSA, which handles a government social program to needy families. LICONSA sells heavily subsidized milk through about 3,000 outlets around the country.
- From 1970 to 1990 the number of Mexican dairies specializing in pasteurized milk fell from 230 to 42. Installed daily capacity presently stands at 6.5 to 7.0 million liters (capacity utilization was only 50% in 1990).
- Parallel markets are common in Mexico, but it is especially pronounced in fluid milk. Those companies which sell fluid milk into normal distribution channels have little or no incentive to expand because the cost of capital and government controls and other factors do not allow an attractive return.
- Under NAFTA a greater emphasis will make dairy operations even more costly to operate. In addition the NAFTA calls for a 10 year phase-out of all existing tariffs, which will make imported product more competitive over time.
- On the other hand, the government has been very lax in enforcing labeling and content requirements in both fluid milk and NFDM, where "extenders" are used in both in order to keep costs down. Coconut oil, dehydrated butter fat, dehydrated whey and other substitutes are widely used in all dairy products produced in Mexico.

- The prices presently paid to producers under free market forces are roughly equivalent to those received by dairy men in the Southwestern U.S. On the other end of the chain, retail prices have remained relatively low due to high supplies, partially due to imports.
- In Mexico City, where about 65% of the country's milk consumption takes place, prices range from US\$0.50/liter to US\$0.60/liter depending on quality. The difference of about 30%-35% between what producers receive and the essentially price-controlled consumer prices does not allow dairies much room for error. This is expected to continue for the foreseeable future (See Table IV-3). This is compared to the range of producer prices in and around Mexico City of about US\$0.30/liter. In the Northern states fluid milk imports from the U.S., which are imported freely with a 10% ad-valorem tax as long as prices are equal to or lower than controlled prices, are gaining favor.
- The industry is adjusting to the new market orientation of the government and those dairies that are now in position to take advantage of the market are survivors which made adjustments during the 1980s to:
 - Divert resources to higher margin value-added (and not price-controlled) products.
 - "Extend" milk by inclusion of lower cost additives.
 - Use alternative marketing channels to get higher prices than published official prices.
 - Diversify through horizontal and vertical integration into, for instance, feed compounding, veterinary products, credit unions, etc.
- In 1991, continuing the government's privatization initiatives, LICONSA divested itself of three dairy operations located in key milk producing regions. These are:
 - Ciudad Delicias, Chihuahua (capacity of 180,000 liters daily)
 - Acayucan, Veracruz (620,000 liters)
 - Aguascalientes, Aguascalientes (1,092,000 liters)

VIII. DATA

A. EXISTING COMMODITY INFORMATION AND DATA

Data sourcing in Mexico's agricultural sector is an inexact science at best. The problem is a historical one and, although modernization efforts are changing attitudes regarding the value of accurate and dependable reporting systems for monitoring purposes, the budgetary constraints on realizing measurable improvements in the near term are significant.

Despite the foregoing statement regarding data sourcing in Mexico, the SCI team did investigate various sources of information which could be effectively employed in this project. Our findings are as follows:

1. World Bank and Inter-American Development Bank (IDB)
We found that there was no primary source data generation on behalf of these agencies. Their data sources were essentially the same as what is available to SCI or Agriculture Canada, but reworked to suit their own needs. There is consistency in the information in that it incorporates macroeconomic data into its agriculture and world development indicators, but their scope is much broader than what is required for this project.
2. Food and Agriculture Organization of the United Nations (FAO)
As with the World Bank and IDB, the FAO relies heavily on secondary data contributed by member nations. The biggest problem in using FAO data is that it is not timely, and is at times almost two years behind in providing annual data. They also cover a broad range of products which dilutes their efforts in these product areas which are of importance to this project. We do consistently use FAO production information at SCI, but primarily for historical data and comparison purposes. To this degree the FAO source can be utilized for this project.
3. Agriculture Canada
We inquired about Agriculture Canada's sourcing of primary data in Mexico and discovered that agriculture and livestock data sourcing is handled by the Commercial Attaché. Like World Bank and IDB data what is generated is primarily secondary data for internal use and dissemination by the various branches of the Canadian government. The trade data, however, is very valuable for the purpose of this project.
4. Statistics Handbook of the Canadian Grains Industry
This statistical handbook is designed for use by the grain industry and is, therefore, applicable to the grain products covered under this project. Of particular worth are the export figures which identify destination countries and can be used for comparison purposes with Mexican import figures.

5. Statistics Canada

Agriculture economics statistics on each of the products covered in this project can be obtained from this source. It will provide cost of production data, census information, area/production/yield information and other information which can be utilized in comparing Canadian and Mexican agriculture policies.

6. United States Department of Agriculture (USDA)

The USDA has a large presence in Mexico and recently formed an Agricultural Trade Office. The FAS (Foreign Agriculture Service) is represented by an Agricultural Attaché. The American Embassy in Mexico City houses many specialists in the various agriculture, livestock and sub-product groupings. In addition, many U.S. trade associations (e.g., the U.S. Feed Grains Council, the American Soybean Association, the U.S. Meat Export Federation, the U.S. National Dairy Board, and others) have varying degrees of presence in Mexico and access to market information which is shared with the Embassy.

The USDA arrives at its core production, supply and demand figures by aggregating information from a variety of sources, including industry participants who retain anonymity. The sources include (but are not limited to):

- Grain Traders
- Producers
- Processors
- Elevator Operators
- State Ministers of Agriculture
- Mexican Government Sources
- Weather Analysts

They do not engage in direct survey work, although they do use the telephones quite a bit to obtain market information. The figures they generate are considered "unofficial" until the inter-departmental members of the U.S. World Agricultural Outlook Board, using data from embassies around the world, arrives at their own world agricultural production estimates. At this time the figures become "official". In Mexico the compilation of data is not considered methodical; however, it does go one step further than total reliance on secondary data.

7. Mexican Ministry of Agriculture (SARH)

SARH is developing an excellent team of statisticians under new leadership and ultimately could become a reliable production, supply and demand source for all agricultural, livestock and meat products. Nonetheless, the historical data compiled prior to 1990 is suspect and the product of a system which did not support accuracy or timeliness. The information now provided is aggregated from statistics provided by each state, which facilitates data compilation by selected regions. SARH is severely understaffed to effectively conduct their own surveys so they must rely on what is known as a "sub-delegado" system in which each state has an appointed SARH affiliate who assumes responsibility for crop and livestock programs and reporting. As gaining this position is more dependent on

political ties than experience or expertise, some states report more accurately than others. Over the course of time SARH could provide acceptable data for monitoring purposes, and this could be phased into the models which are being built. At the present time, however, their historical data is not dependable enough to include in model formulation.

With regards to trade data, SARH (through its international relations unit) depends on data provided by their Department of Commerce (SECOFI) which puts out import statistics by country.

8. Trade Associations in Livestock, Meat and Poultry In Mexico
The three trade associations covering live cattle/beef, live hogs/pork, and broiler chickens/chicken meat all generate primary source information through membership surveying. The data is heavily utilized for political purposes and must therefore be considered flawed. However, if it can be regularly obtained it could be used for comparison purposes.
9. Servicio Nacional de Informacion de Mercados (SNIM)
SNIM is a decentralized public agency which now provides for-profit information services to clients. They publish a price list for products which they track. The information is very good with regards to pricing, and includes regular price checks at public markets throughout the nation for some cereals and beans which are for food consumption. They also track live animal prices, slaughter numbers and various meat cut and carcass prices for animal products. In this regard they are the only dependable price discovery source in Mexico for a number of products. The project team should review this pricing data for meats and live animals and judge whether it should be used in model development and in future monitoring.
10. U.S. Bureau of Census Trade Data
To the extent that U.S. export and import figures are important, the data available through this agency should suffice. It is raw customs data which goes to the U.S. Department of Commerce and, through harmonized code identification, then gets transferred to other agencies. The USDA gets information on the products for which they are responsible and emits final figures, but the lag time is much more than the primary data lag time of three months from the U.S. Bureau of Census.
11. CONASUPO
Prior to 1989 CONASUPO data could be useful, particularly with regards to trade statistics, as they had complete control over the trade of agricultural commodities. This source was not pursued during the two Mexico visits because it is already known to SCI, and the organization is being dismantled. The data will most likely be made available through another SARH agency, possibly ASERCA, and it could be retrieved if necessary. CONASUPO still retains control of non-fat dry milk imports and its distribution through the country. As imports are close to 100% of total NFDM availability, their data on this item is key.

B. FINDINGS REGARDING DATA AVAILABILITY AND RELIABILITY

For model construction purposes, SCI has used data evaluation criteria to identify the optimum data sources for each concept. The evaluation includes the following:

- Correlations with other data - The key requirement is to make sure that consistency exists between data and microeconomic theory. If the correlations are consistent, then the data can be included as an endogenous variable in the solution process. If the correlations are not consistent, then the data is either excluded or set aside for possible use as an exogenous assumption/policy lever.
- Source of data - Primary data collection by U.S. and foreign government sources are generally preferred when considered consistent. National trade organizations are acceptable once thoroughly reviewed. Local trade organizations have to be scrutinized more carefully.
- Intervals of data availability - We have required a minimum of ten years history and in some concepts prefer one month availability.
- Frequency of data - A higher frequency is preferred as it allows for regular monitoring and more frequent updates of forecasts. The frequency is generally annual, quarterly or monthly, with a preference for the shortest time frame.
- Stability of data definition - This involves judging how standardized the data quality is and how consistent its location is through time.

The SCI team in Memphis applied this evaluation criteria to the data and information which was identified as usable in model construction. We found the most reliable data sources available for the specific concepts to be modeled are as follows:

1. Crops

| <u>Concept</u> | <u>Best Available Data Source</u> |
|-------------------|-----------------------------------|
| Acreage Planted | USDA |
| Acreage Harvested | USDA |
| Yield | USDA |
| Production | USDA |
| Imports | SARH |
| Exports | SARH/Stats Canada |
| Domestic Usage | USDA |
| Ending Stocks | USDA |
| Prices | USDA (with SNIM back-up) |
| Income (Macro) | Banco de Mexico |

2. Livestock and Meats - Cattle/Beef

| <u>Concept</u> | <u>Best Available Data Source</u> |
|------------------------|-----------------------------------|
| Inventories | USDA |
| Dressed Weights | USDA |
| Exports | SARH/Stats Canada |
| Imports | SARH |
| Slaughter | USDA |
| Steer Price | USDA (with SNIM back-up) |
| Domestic Consumption | USDA |
| Per Capita Consumption | USDA |
| Export - Beef | SARH |
| Imports - Beef | USDA |
| Income (Macro) | Banco de Mexico |

3. Livestock and Meats - Hogs/Pork

| <u>Concept</u> | <u>Best Available Data Source</u> |
|------------------------|-----------------------------------|
| Price | USDA (with SNIM back-up) |
| Inventories | USDA |
| Dressed Weights | USDA |
| Slaughter | USDA (with SNIM back-up) |
| Exports | SARH/Stats Canada |
| Imports | SARH |
| Domestic Consumption | USDA |
| Per Capita Consumption | USDA |
| Exports-Pork | SARH/Stats Canada |
| Imports - Pork | SARH |
| Production - Pork | USDA |
| Income (Marco) | Banco de Mexico |

4. Livestock and Meats - Broiler Chicken

| <u>Concept</u> | <u>Best Available Data Source</u> |
|------------------|-----------------------------------|
| Price | USDA (with SNIM back-up) |
| Domestic Usage | USDA |
| Exports | SARH/Stats Canada |
| Imports | SARH |
| Production | USDA |
| Usage per Capita | USDA |
| Inventories | USDA |
| Slaughter | USDA (with SNIM back-up) |
| Weights | USDA |
| Income (Macro) | Banco de Mexico |

5. Dairy

| <u>Concept</u> | <u>Best Available Data Source</u> |
|------------------------|-----------------------------------|
| Cow Inventories | USDA |
| Milk per Cow | USDA |
| Fluid Milk Production | USDA |
| Fluid Milk Consumption | USDA |
| Fluid Milk Prices | USDA (with SNIM back-up) |
| NFDM Production | USDA/CONASUPO |
| NFDM Consumption | USDA/CONASUPO |
| NFDM Imports | SARH |
| NFDM Exports | SARH/Stats Canada |
| NFDM Stocks | USDA/CONASUPO |
| NFDM Prices | USDA/CONASUPO |

IX. FRAMEWORK FOR COMPLETING STUDY OBJECTIVES 3-5 IN PHASE II

A. PRELIMINARY STATEMENT REGARDING MODEL

It is the intention of the Sparks Companies, Inc. (SCI) to undertake a relatively standard econometric modeling approach to accomplish the task of developing a forecasting system and ultimately to accomplish the task of providing a series of projections about the Mexican agricultural economy for the purposes of economic outlook work and Canadian policy direction with respect to Mexico. Therefore, the model requires a mix of traditional economic relationships to be developed, while integrating selected "policy levers" allowing for the evaluation of policy impacts related to domestic production in Mexico and/or international trade (especially with respect to the North American Free Trade Agreement, NAFTA). The basic conceptual framework to be followed for each commodity is a traditional statement of the relationship of supply and demand, as indicated below:

$$\begin{aligned} \text{Total Supply} &= \text{Beginning Stocks} + \text{Production} + \text{Imports} \\ \text{Total Use} &= \text{Domestic Use} + \text{Exports} + \text{Ending Stocks} \end{aligned}$$

whereby, at equilibrium:

$$\text{Total Supply} = \text{Total Use} \quad \text{or}$$

$$\text{Beginning Stocks} + \text{Production} + \text{Imports} = \text{Domestic Use} + \text{Exports} + \text{Ending Stocks}.$$

Furthermore, the anticipated relationship to be modeled between price and the various supply and demand components is as expressed below:

$$\text{Price} = f(\text{Ending Stocks}/\text{Total Use}, X)$$

where:

$$X = \text{a matrix of other exogenous variables.}$$

There is considerable specification difference related to crop versus livestock commodities based on the natural differences associated with the production processed. In particular, the crop commodity production will take the form of:

$$\text{Production} = \text{Area Harvested} \times \text{Yield per Area Unit}$$

where:

$$\text{Area Harvested} = f(\text{Area Planted}).$$

Moreover, there is a recursive relationship to be modeled such that the "key variable" Area Planted will be developed as a function of both price (i.e. market drivers) and policy factors. In particular, there will be an interaction modeled, as expressed in the Phase I document whereby, the basis elements of the interior market in Mexico are linked to international markets (likely U.S. futures markets) and tied to farmer supports and ultimately to area control policies. All of the details and innuendo of this part of the modeling task are yet to be established, as this is part of the proposed Phase II effort. The production modeling for livestock commodities is different again, due to the normal production process as expressed below:

$$\text{Production} = \text{Slaughter Numbers} \times \text{Slaughter Weights}$$

where,

$$\text{Slaughter Numbers} = f(\text{Animal Numbers}, X)$$

Note additionally, the Animal Numbers and Slaughter Weights are to be modeled as a function of both "biologically driven reproduction features" as well as the economics that may accelerate and/or slowdown slaughter rates or rebuilding of herds related to the relative prices of the species and associated feed costs and other cost factors.

The consequence of the generic approach discussed above is that the crop and livestock sectors of Mexico's agriculture are linked and the policy levers impacting one or the other will flow back and forth between the two main component sub-sectors. Moreover, the data available to undertake the modeling is available from 1975 allowing for ample degrees of freedom. The modeling will be done utilizing Micro TSP software and the ultimate system of equations are likely to be established in Micro TSP as the solution algorithm. It is expected that the model will be designed to have four blocks or subsystems, including:

- Subsystem 1: Exogenous Variables
- Subsystem 2: First Recursive Equations
- Subsystem 3: Simultaneous Equations, and
- Subsystem 4: Last Recursive Equations.

Note, that the exogenous variables generally refer to factors of importance which will be imbedded throughout the system that are modeled but not behaviorally predictable (i.e. policy levers and weather are two good examples). The first recursive equations refer to those variables that are behavioral and modelable that are independent driving variables (Acres Planted are a good example). The simultaneous subsystem refers to the interactive supply demand components of a given commodity and/or the inter-commodity interactions usually tied to price determination. Finally, the last recursive subsystem refers to behavioral variables that are driven by the other three subsystems and generally serve as summary statements for the model, albeit behaviorally determined (farm income components represent good examples).

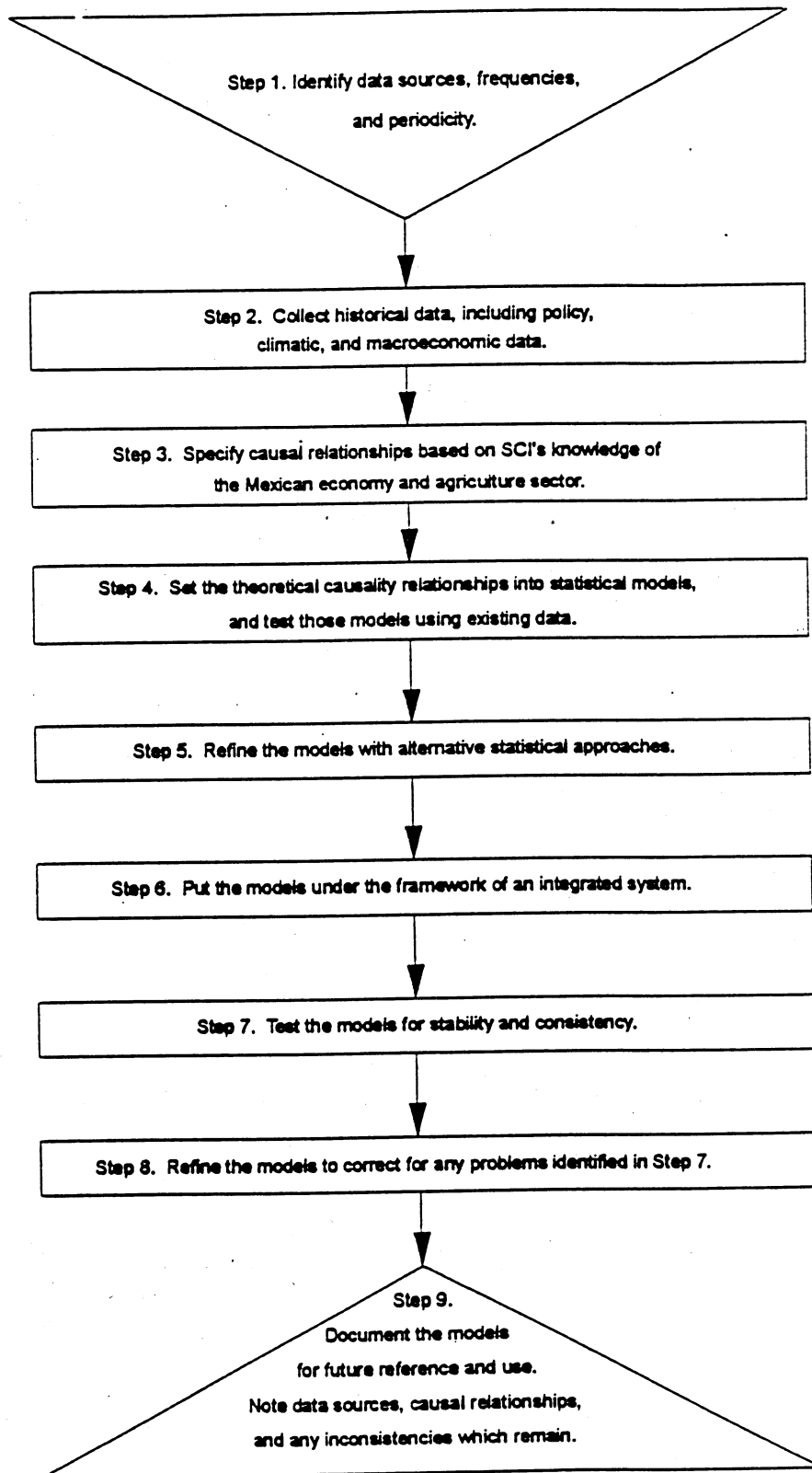
It is intended that the final model will be validated over one year of recent history (likely 1993) to test the capabilities of the system over and out-of-sample set of data and activity. In short the "first draft" model will be developed on data only through 1992. In the validation process, the error patterns of each equation will be reviewed and those equations that do not perform to expectation will be remodeled. Given a satisfactory model validation, the equations will be re-estimated once again including the new data (i.e. the most up-to-date history possible, again likely 1993 data in this case) and the coefficients will be compared in terms of their signs, magnitude and statistical significance. Those coefficients and in turn those equations that exhibit substantially different statistical results upon re-estimation with new and more data will be qualitatively judged by the project team and unexplained differences reconciled by practical experience and apriori knowledge.

The forecasting exercise is driven by the intent of the decision maker's efforts. In the case of this project it is understood that the decision maker has two primary interests, namely: (1) to be able to make economic projections for the agriculture sector and selected commodities in Mexico and (2) to test alternative policies associated with Mexico's production of agricultural goods and/or their trade, especially as these commodities may represent risks and opportunities for Canada's agriculture and food sectors. The model's early structural design is such that it is intended to facilitate such activities. Given a validated model, each forecast will be preceded with an analytic exercise called a "null solution", that is the solution of each equation with actual data known (historically) and with the equation's results contrast against actuals. This procedure will enable the model user and ultimate decision maker to judge the error magnitude and patterns over recent and non-modeled history (i.e. these null solutions are for periods of time not included in the regression results). The net effect of this procedure is that problem areas of the model are exposed to determine whether the forecast error is the result of mis-specifications and/or changing economic structures or data problems. Moreover, this procedure will allow the forecaster to determine "ad hoc" adjustments to the model system.

It is hoped that the material provided above serves to answer the questions posed by Agriculture Canada regarding the modeling and forecasting procedures to be followed in the project. It is usually the case, that while modeling efforts can be planned in great detail the actual process of modeling generates more new ideas and unforeseen problems, which in turn require creativity and problem solutions not predictable or appropriately discussed at this time. Based on SCI's investigations to date, the modeling effort, as outlined in the Phase II discussion provided on pages 155 through 163 in the Phase I document, are still valid. It is therefore the project team's opinion that the modeling effort can proceed as originally designed.

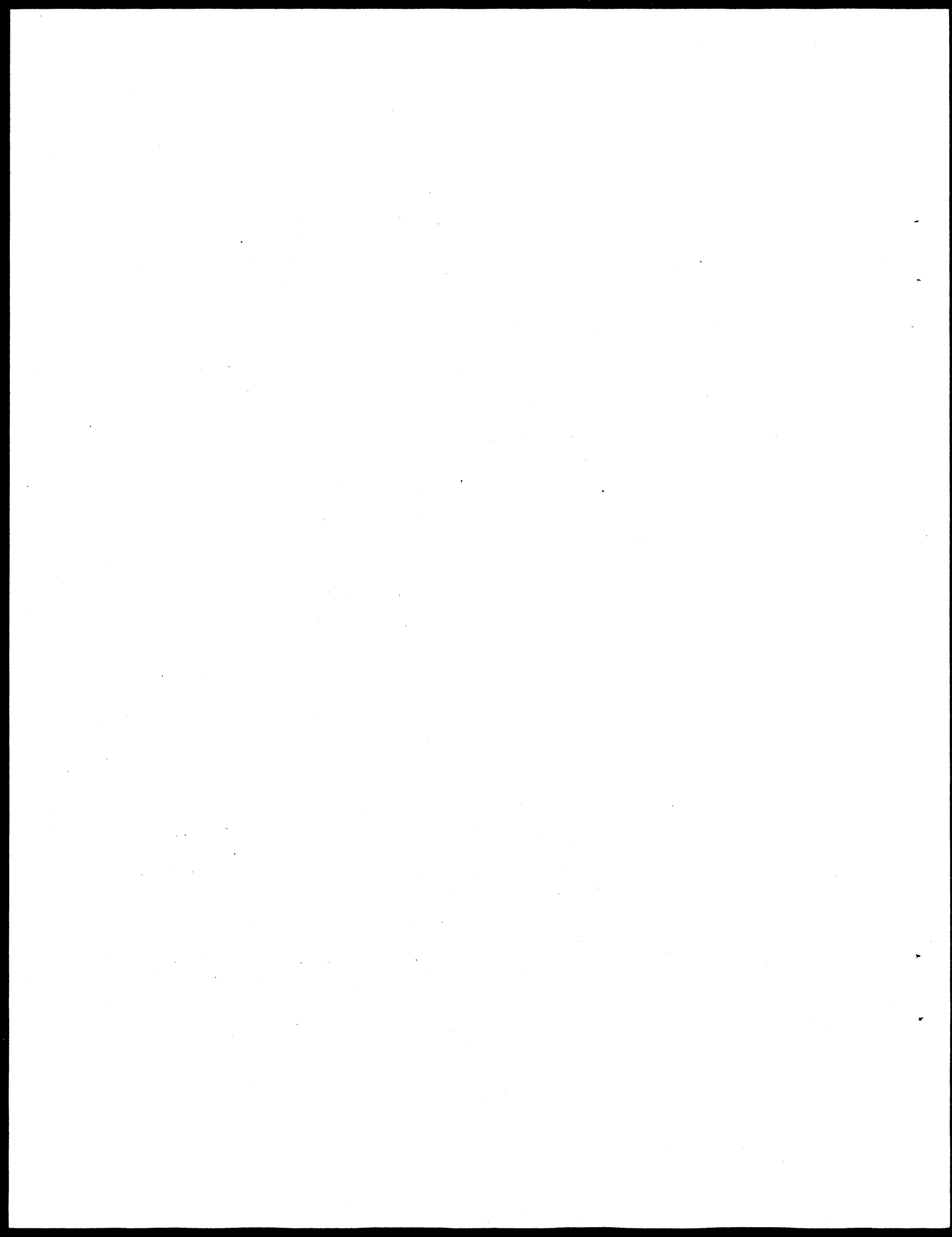
Having concluded that no significant change to the modeling approach is necessary at this time, we restate the Phase II work required from our original proposal. We also present Figure IX-1: Modeling Approach to identify the steps we will take to meet the objectives of the study.

FIGURE IX-1: MODELING APPROACH



APPENDICES

A. COMMODITY BENCHMARK PAPERS



COMMODITY BENCHMARKS

The purpose of this task is to present a brief on each commodity. A supply/demand balance has been prepared for each commodity and this will form a base for creating benchmark criteria during the work performed under Phase II. The commodity briefs are the starting point for system modeling and ultimately the commodity forecasts to be performed in the Phase II work.

A separate section has been set out for each commodity. The first page of the section is a balance sheet showing historical supply/demand and price information, as well as historical data for factors which have been preliminary identified as explanatory variables for the commodity (i.e., it is proposed that changes in these variables explain changes in balances for the underlying commodity, although detailed models have not been solidified).

Where applicable we have included an additional table which presents SCI projections through 1997. This information is provided for reference and will be adjusted as necessary during the course of this study. Not included in this report is the preliminary work undertaken for each commodity, such as scatter diagrams covering a wide range of historical relationships, as well as a statement regarding the conceptual framework for building models for each commodity. The scatters and other preliminary work is available under separate cover, and is not included as a part of this Phase I report because they are working documents which have not yet been fully reviewed by the team. Phase II modeling efforts will be built based on these functional statements and will be addressed during the second phase of the project.

Note: As an example only, we have presented data from 1984-1992 because it fits on a single page. For the development of the model we will use historical series going back to 1975. We consider the 1975-1992 period a long enough series for the purposes of this work. The only product group which might be problematical with regards to historical series is poultry, and we are in the process of finding 1975-1984 data which we can confidently use in the model development phase.

Table A-1: Barley: Mexican Supply/Demand Balances and Explanatory Variables

| | Units | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992* |
|--|----------------|-------|-------|--------|--------|--------|--------|--------|--------|--------|
| Barley: | | | | | | | | | | |
| Area Harvested | (000 Hectares) | 260 | 250 | 260 | 300 | 255 | 290 | 240 | 220 | 240 |
| Yield | (Quintals/Ha.) | 16.2 | 16.8 | 18.5 | 17.0 | 17.5 | 16.6 | 18.8 | 19.5 | 18.8 |
| Production | (000 MT) | 420 | 420 | 480 | 510 | 445 | 480 | 450 | 430 | 450 |
| Beginning Stocks | (000 MT) | 120 | 108 | 58 | 43 | 79 | 99 | 99 | 89 | 89 |
| Imports | (000 MT) | 83 | 30 | 5 | 41 | 100 | 140 | 125 | 150 | 134 |
| Feed Use | (000 MT) | 200 | 180 | 185 | 185 | 180 | 180 | 170 | 170 | 156 |
| Food Use | (000 MT) | 315 | 320 | 315 | 330 | 345 | 440 | 415 | 410 | 452 |
| Domestic Use | (000 MT) | 515 | 500 | 500 | 515 | 525 | 620 | 585 | 580 | 608 |
| Exports | (000 MT) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ending Stocks | (000 MT) | 108 | 58 | 43 | 79 | 99 | 99 | 89 | 89 | 65 |
| Explanatory Variables: | | | | | | | | | | |
| Population | (Millions) | 76.31 | 77.94 | 79.57 | 81.20 | 82.84 | 84.49 | 86.15 | 87.84 | 89.45 |
| Pork Production | (000 MT) | 942 | 865 | 910 | 950 | 964 | 910 | 792 | 820 | 874 |
| Guarantee Price: (000 Pesos/MT) | | | | | | | | | | |
| Jan | | 11.10 | 11.10 | 58.00 | 225.00 | 440.00 | 507.00 | 531.00 | 630.00 | 680.00 |
| Feb | | 11.10 | 11.10 | 58.00 | 225.00 | 440.00 | 507.00 | 531.00 | 630.00 | 680.00 |
| Mar | | 11.10 | 11.10 | 58.00 | 225.00 | 440.00 | 507.00 | 531.00 | 630.00 | 680.00 |
| Apr | | 11.10 | 11.10 | 58.00 | 225.00 | 440.00 | 507.00 | 531.00 | 630.00 | 680.00 |
| May | | 11.10 | 11.10 | 58.00 | 225.00 | 440.00 | 507.00 | 531.00 | 630.00 | 680.00 |
| Jun | | 11.10 | 11.10 | 58.00 | 225.00 | 440.00 | 507.00 | 531.00 | 630.00 | 680.00 |
| Jul | | 11.10 | 11.10 | 58.00 | 320.00 | 440.00 | 531.00 | 630.00 | 680.00 | |
| Aug | | 11.10 | 11.10 | 67.50 | 320.00 | 440.00 | 531.00 | 630.00 | 680.00 | |
| Sep | | 11.10 | 67.50 | 225.00 | 320.00 | 440.00 | 531.00 | 630.00 | 680.00 | |
| Oct | | 11.10 | 70.00 | 225.00 | 320.00 | 440.00 | 531.00 | 630.00 | 680.00 | |
| Nov | | 11.10 | 58.00 | 225.00 | 440.00 | 507.00 | 531.00 | 630.00 | 680.00 | |
| Dec | | 11.10 | 58.00 | 225.00 | 440.00 | 507.00 | 531.00 | 630.00 | 680.00 | |

* Preliminary Data

Table B-1: Corn: Mexican Supply/Demand Balances and Explanatory Variables

| | Units | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 |
|-------------------------------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Corn: | | | | | | | | | | |
| Area Planted | (000 Hectares) | | | | | | | | | |
| Area Harvested | (000 Hectares) | 6300 | 6200 | 6000 | 6000 | 6000 | 5800 | 6600 | 7700 | 7900 |
| Yield | (Quintals/Ha.) | 15.7 | 16.9 | 16.7 | 16.5 | 16.8 | 16.8 | 21.4 | 18.8 | 17.7 |
| Production | (000 MT) | 9900 | 10500 | 10000 | 9900 | 10100 | 9750 | 14100 | 14500 | 14000 |
| Beginning Stocks | (000 MT) | 444 | 228 | 478 | 628 | 403 | 194 | 944 | 1644 | 944 |
| Imports | (000 MT) | 1684 | 1736 | 3400 | 3150 | 3120 | 5000 | 1800 | 1100 | 2356 |
| Feed Use | (000 MT) | 200 | 186 | 500 | 350 | 350 | 850 | 1700 | 2400 | 2500 |
| Food Use | (000 MT) | 11600 | 11800 | 12750 | 12925 | 13079 | 13150 | 13500 | 13900 | 13800 |
| Domestic Use | (000 MT) | 11800 | 11986 | 13250 | 13275 | 13429 | 14000 | 15200 | 16200 | 16300 |
| Exports | (000 MT) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 0 |
| Ending Stocks | (000 MT) | 228 | 478 | 628 | 403 | 194 | 944 | 1644 | 944 | 1000 |
| Explanatory Variables: | | | | | | | | | | |
| Population | (Millions) | 76.31 | 77.94 | 79.57 | 81.20 | 82.84 | 84.49 | 86.15 | 87.84 | 89.45 |
| Pork Production | (000 MT) | 942 | 865 | 910 | 950 | 964 | 910 | 792 | 820 | 874 |
| Broiler Production | (000 MT) | 465 | 490 | 458 | 395 | 490 | 590 | 660 | 790 | 874 |
| Feedgrain demand | (000 MT) | 5091 | 4797 | 4935 | 4990 | 5237 | 5192 | 4803 | 5181 | 5584 |
| Wholesale Prices | (Index) | 65.1 | 100 | 188.4 | 443.9 | 922.5 | 1070.8 | 1320.8 | 1591.9 | 1441 |
| Exchange Rate | (Pesos/US\$) | 192.6 | 371.7 | 923.5 | 2209.7 | 2281 | 2641 | 2945.4 | 3071 | 3125 |
| US Corn Price at Far | (Cents/Bu.) | 246.17 | 188.75 | 158.25 | 235.33 | 240.25 | 239.50 | 234.00 | 228.90 | |
| Corn: | | | | | | | | | | |
| Guarantee Price: | (000 Pesos/MT) | | | | | | | | | |
| Jan | | 33.45 | 53.30 | 96.00 | 245.00 | 370.00 | 435.00 | 539.00 | 595.00 | 625.00 |
| Feb | | 33.45 | 53.30 | 96.00 | 245.00 | 370.00 | 435.00 | 539.00 | 595.00 | 625.00 |
| Mar | | 33.45 | 53.30 | 96.00 | 245.00 | 370.00 | 435.00 | 539.00 | 595.00 | 625.00 |
| Apr | | 43.50 | 53.30 | 96.00 | 245.00 | 370.00 | 435.00 | 539.00 | 595.00 | 625.00 |
| May | | 43.50 | 53.30 | 96.00 | 245.00 | 370.00 | 435.00 | 539.00 | 595.00 | 625.00 |
| Jun | | 43.50 | 75.00 | 96.00 | 245.00 | 370.00 | 435.00 | 539.00 | 595.00 | 625.00 |
| Jul | | 43.50 | 75.00 | 160.00 | 245.00 | 370.00 | 435.00 | 539.00 | 595.00 | 625.00 |
| Aug | | 43.50 | 75.00 | 175.00 | 310.00 | 370.00 | 435.00 | 539.00 | 595.00 | 625.00 |
| Sep | | 43.50 | 96.00 | 175.00 | 310.00 | 370.00 | 435.00 | 539.00 | 595.00 | 625.00 |
| Oct | | 53.30 | 96.00 | 245.00 | 370.00 | 370.00 | 435.00 | 539.00 | 595.00 | 625.00 |
| Nov | | 53.30 | 96.00 | 245.00 | 370.00 | 370.00 | 435.00 | 539.00 | 595.00 | 625.00 |
| Dec | | 53.30 | 96.00 | 245.00 | 370.00 | 370.00 | 435.00 | 539.00 | 595.00 | 625.00 |

**Table B-2:
Feedgrain Balance:
Mexico**

| | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 |
|------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Corn | | | | | | | | | | |
| Area Harvested | 6000 | 5800 | 6600 | 7700 | 7900 | 7820 | 7840 | 7860 | 7880 | 7900 |
| Yield | 16.8 | 16.8 | 21.4 | 18.8 | 17.7 | 18.5 | 18.8 | 19.1 | 19.3 | 19.5 |
| Beginning Stocks | 403 | 194 | 944 | 1644 | 944 | 1000 | 1100 | 1150 | 1100 | 1100 |
| Production | 10100 | 9750 | 14100 | 14500 | 14000 | 14467 | 14739 | 15013 | 15208 | 15405 |
| Imports | 3120 | 5000 | 1800 | 1100 | 2356 | 2633 | 2711 | 2812 | 2917 | 3095 |
| Total Supply | 13623 | 14944 | 16844 | 17244 | 17300 | 18100 | 18550 | 18975 | 19225 | 19600 |
| Exports | 0 | 0 | 0 | 100 | 0 | 0 | 0 | 0 | 0 | 0 |
| Domestic Use | 13429 | 14000 | 15200 | 16200 | 16300 | 17000 | 17400 | 17875 | 18125 | 18500 |
| Food Use | 13079 | 13150 | 13500 | 13900 | 13800 | 14100 | 14300 | 14575 | 14625 | 14800 |
| Feed Use | 350 | 850 | 1700 | 2400 | 2500 | 2900 | 3100 | 3300 | 3500 | 3700 |
| Total Use | 13429 | 14000 | 15200 | 16300 | 16300 | 17000 | 17400 | 17875 | 18125 | 18500 |
| Ending Stocks | 194 | 944 | 1644 | 944 | 1000 | 1100 | 1150 | 1100 | 1100 | 1100 |
| Per Capita | 0.1621 | 0.1657 | 0.1764 | 0.1844 | 0.1822 | 0.1866 | 0.1876 | 0.1894 | 0.1887 | 0.1894 |

| | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 |
|------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Sorghum | | | | | | | | | | |
| Area Harvested | 1100 | 1300 | 1300 | 820 | 750 | 710 | 710 | 710 | 710 | 710 |
| Yield | 28.3 | 28.8 | 28.5 | 31.7 | 29.3 | 29.5 | 29.6 | 29.7 | 29.8 | 29.9 |
| Beginning Stocks | 154 | 241 | 991 | 891 | 891 | 891 | 800 | 800 | 900 | 900 |
| Production | 3110 | 3750 | 3700 | 2600 | 2200 | 2095 | 2102 | 2109 | 2116 | 2123 |
| Imports | 2277 | 3000 | 3000 | 4700 | 5500 | 5600 | 5700 | 5800 | 5900 | 6000 |
| Total Supply | 5541 | 6991 | 7691 | 8191 | 8591 | 8586 | 8602 | 8709 | 8916 | 9023 |
| Exports | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Domestic Use | 5300 | 6000 | 6800 | 7300 | 7700 | 7786 | 7802 | 7809 | 8016 | 8123 |
| Feed Use | 5300 | 6000 | 6800 | 7300 | 7700 | 7786 | 7802 | 7809 | 8016 | 8123 |
| Total Use | 5300 | 6000 | 6800 | 7300 | 7700 | 7786 | 7802 | 7809 | 8016 | 8123 |
| Ending Stocks | 241 | 991 | 891 | 891 | 891 | 800 | 800 | 900 | 900 | 900 |
| Per Capita | 0.0640 | 0.0710 | 0.0789 | 0.0831 | 0.0861 | 0.0855 | 0.0841 | 0.0827 | 0.0835 | 0.0832 |
| Price Nuevo Leon | | 383 | 427 | 473 | 503 | 395 | 418 | 430 | 440 | 449 |

Area = Thousand Hectares; Yield = quintals per hectare; Production = thousand metric tons

Shaded area represents SCI forecast.

Table C-1: Dry Beans: Mexican Supply/Demand Balances and Explanatory Variables

| | Units | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992* |
|-------------------------------|----------------|--------|--------|--------|--------|--------|---------|---------|---------|---------|
| Dry Beans: | | | | | | | | | | |
| Area Harvested | (000 Hectares) | 1600 | 1800 | 1950 | 1950 | 1850 | 1600 | 2200 | 1750 | 1800 |
| Yield | (Quintals/Ha.) | 5.1 | 5.6 | 5.3 | 5.6 | 6.4 | 3.8 | 5.9 | 5.7 | 5.0 |
| Production | (000 MT) | 820 | 1000 | 1025 | 1100 | 1175 | 605 | 1300 | 1000 | 900 |
| Beginning Stocks | (000 MT) | 500 | 151 | 26 | 242 | 145 | 215 | 45 | 320 | 210 |
| Imports | (000 MT) | 91 | 92 | 275 | 10 | 75 | 275 | 125 | 50 | 150 |
| Domestic Use | (000 MT) | 1260 | 1217 | 1084 | 1207 | 1180 | 1050 | 1150 | 1150 | 1150 |
| Exports | (000 MT) | 0 | 0 | 0 | 17 | 0 | 0 | 0 | 10 | 20 |
| Ending Stocks | (000 MT) | 151 | 26 | 242 | 145 | 215 | 45 | 320 | 210 | 90 |
| Explanatory Variables: | | | | | | | | | | |
| Population | (Millions) | 76.31 | 77.94 | 79.57 | 81.20 | 82.84 | 84.49 | 86.15 | 87.84 | 89.45 |
| US Corn Price at Farm | (Cents/Bu.) | 192.6 | 246.17 | 188.75 | 158.25 | 235.33 | 240.25 | 239.50 | 234.00 | 228.90 |
| Exchange Rate | (Pesos/US\$) | 65.1 | 371.7 | 923.5 | 2209.7 | 2281 | 2641 | 2945.4 | 3071 | 3125 |
| Wholesale Prices | (Index) | | 100 | 188.4 | 443.9 | 922.5 | 1070.8 | 1320.8 | 1591.9 | 1440.88 |
| Dry Bean: | | | | | | | | | | |
| Guarantee Price: | (000 Pesos/MT) | 52.85 | 155.00 | 217.00 | 525.00 | 680.00 | 1725.00 | 1800.00 | 2100.00 | 2100.00 |
| Jan | | 52.85 | 155.00 | 217.00 | 525.00 | 680.00 | 1725.00 | 1800.00 | 2100.00 | 2100.00 |
| Feb | | 52.85 | 155.00 | 350.00 | 525.00 | 680.00 | 1725.00 | 1800.00 | 2100.00 | 2100.00 |
| Mar | | 52.85 | 155.00 | 350.00 | 525.00 | 680.00 | 1725.00 | 1800.00 | 2100.00 | 2100.00 |
| Apr | | 52.85 | 155.00 | 350.00 | 525.00 | 680.00 | 1725.00 | 1800.00 | 2100.00 | 2100.00 |
| May | | 52.85 | 155.00 | 350.00 | 680.00 | 680.00 | 1725.00 | 1800.00 | 2100.00 | 2100.00 |
| Jun | | 52.85 | 155.00 | 350.00 | 680.00 | 680.00 | 1850.00 | 1800.00 | 2100.00 | 2100.00 |
| Jul | | 52.85 | 155.00 | 350.00 | 680.00 | 680.00 | 1850.00 | 1800.00 | 2100.00 | 2100.00 |
| Aug | | 155.00 | 217.00 | 350.00 | 680.00 | 680.00 | 1850.00 | 1800.00 | 2100.00 | 2100.00 |
| Sep | | 155.00 | 217.00 | 525.00 | 680.00 | 680.00 | 1800.00 | 2100.00 | 2100.00 | 2100.00 |
| Oct | | 155.00 | 217.00 | 525.00 | 680.00 | 923.90 | 1800.00 | 2100.00 | 2100.00 | 2100.00 |
| Nov | | 155.00 | 217.00 | 525.00 | 680.00 | 923.90 | 1800.00 | 2100.00 | 2100.00 | 2100.00 |
| Dec | | 155.00 | 217.00 | 525.00 | 680.00 | 923.90 | 1800.00 | 2100.00 | 2100.00 | 2100.00 |

* Preliminary Data

**Table C-2:
Dry Bean Balance: Mexico**

| | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 |
|------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Area Harvested | 1850 | 1600 | 2200 | 1750 | 1800 | 1800 | 1825 | 1850 | 1890 | 1900 |
| Yield | 6.4 | 3.8 | 5.9 | 5.7 | 5.0 | 5.4 | 5.4 | 5.4 | 5.4 | 5.4 |
| Beginning Stocks | 145 | 215 | 45 | 320 | 210 | 90 | 129 | 147 | 156 | 166 |
| Production | 1175 | 605 | 1300 | 1000 | 900 | 975 | 988 | 1000 | 1020 | 1024 |
| Imports | 75 | 275 | 125 | 50 | 150 | 135 | 133 | 154 | 148 | 159 |
| Total Supply | 1395 | 1095 | 1470 | 1370 | 1260 | 1200 | 1250 | 1300 | 1325 | 1350 |
| Exports | 0 | 0 | 0 | 10 | 20 | 0 | 0 | 0 | 0 | 0 |
| Domestic Use | 1180 | 1050 | 1150 | 1150 | 1150 | 1200 | 1250 | 1300 | 1325 | 1350 |
| Total Use | 1180 | 1050 | 1150 | 1160 | 1170 | 1200 | 1250 | 1300 | 1325 | 1350 |
| Ending Stocks | 215 | 45 | 320 | 210 | 90 | 129 | 147 | 156 | 166 | 171 |
| Per Capita | 0.0142 | 0.0124 | 0.0133 | 0.0131 | 0.0129 | 0.0132 | 0.0135 | 0.0138 | 0.0138 | 0.0138 |

Area = thousand hectares; Yield = quintals per hectare; Production = thousand metric tons.

Shaded area represents SCI forecast.

Table D-1: Rice: Mexican Supply/Demand Balances

| | Units | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992* |
|-------------------------------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Rice, Rough: | | | | | | | | | | |
| Area Harvested | (000 Hectares) | 120 | 192 | 125 | 150 | 120 | 140 | 75 | 70 | 70 |
| Yield | (Quintals/Ha.) | 36.3 | 38.9 | 42.1 | 38.0 | 33.3 | 38.6 | 40.0 | 40.7 | 41.0 |
| Rice, Milled: | | | | | | | | | | |
| Beginning Stocks | (000 MT) | 46 | 115 | 200 | 106 | 46 | 71 | 121 | 56 | 96 |
| Production | (000 MT) | 291 | 498 | 351 | 380 | 266 | 360 | 200 | 190 | 200 |
| Imports | (000 MT) | 203 | 23 | 0 | 0 | 189 | 130 | 175 | 300 | 250 |
| Total Supply | (000 MT) | 540 | 636 | 551 | 486 | 501 | 561 | 496 | 546 | 546 |
| Exports | (000 MT) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Domestic Use | (000 MT) | 425 | 436 | 445 | 440 | 430 | 440 | 440 | 450 | 460 |
| Total Use | (000 MT) | 425 | 436 | 445 | 440 | 430 | 440 | 440 | 450 | 460 |
| Ending Stocks | (000 MT) | 115 | 200 | 106 | 46 | 71 | 121 | 56 | 96 | 86 |
| Per Capita Dom Use | (MT/Person) | 0.0056 | 0.0056 | 0.0056 | 0.0054 | 0.0052 | 0.0052 | 0.0051 | 0.0051 | 0.0051 |
| Explanatory Variables: | | | | | | | | | | |
| Population | (Millions) | 76.31 | 77.94 | 79.57 | 81.20 | 82.84 | 84.49 | 86.15 | 87.84 | 89.45 |
| Guarantee Price: | (000 Pesos/MT) | | | | | | | | | |
| Jan | | 34.10 | 53.80 | 98.00 | 238.00 | 238.00 | 238.00 | 699.00 | 660.00 | 660.00 |
| Feb | | 34.10 | 53.80 | 98.00 | 238.00 | 238.00 | 238.00 | 699.00 | 660.00 | 660.00 |
| Mar | | 34.10 | 53.80 | 98.00 | 238.00 | 238.00 | 238.00 | 699.00 | 660.00 | 660.00 |
| Apr | | 34.10 | 53.80 | 98.00 | 238.00 | 238.00 | 238.00 | 699.00 | 660.00 | 660.00 |
| May | | 34.10 | 53.80 | 98.00 | 238.00 | 238.00 | 238.00 | 699.00 | 660.00 | 660.00 |
| Jun | | 34.10 | 53.80 | 98.00 | 238.00 | 238.00 | 238.00 | 699.00 | 660.00 | 660.00 |
| Jul | | 34.10 | 53.80 | 98.00 | 238.00 | 238.00 | 238.00 | 699.00 | 660.00 | 660.00 |
| Aug | | 34.10 | 53.80 | 98.00 | 238.00 | 238.00 | 238.00 | 699.00 | 660.00 | 660.00 |
| Sep | | 34.10 | 85.00 | 219.00 | 238.00 | 238.00 | 238.00 | 699.00 | 660.00 | 660.00 |
| Oct | | 53.80 | 85.00 | 219.00 | 238.00 | 238.00 | 699.00 | 660.00 | 660.00 | 660.00 |
| Nov | | 53.80 | 85.00 | 219.00 | 238.00 | 238.00 | 699.00 | 660.00 | 660.00 | 660.00 |
| Dec | | 53.80 | 98.00 | 238.00 | 238.00 | 238.00 | 699.00 | 660.00 | 660.00 | 660.00 |

* Preliminary Data

Table E-1: Sorghum: Mexican Supply/Demand Balances

| | Units | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992* |
|--------------------------|----------------|-------|-------|--------|--------|--------|--------|--------|--------|--------|
| Sorghum: | | | | | | | | | | |
| Area Harvested | (000 Hectares) | 1300 | 1300 | 1350 | 1375 | 1100 | 1300 | 1300 | 820 | 750 |
| Yield | (Quintals/Ha.) | 31.5 | 28.5 | 31.9 | 29.1 | 28.3 | 28.8 | 28.5 | 31.7 | 29.3 |
| Production | (000 MT) | 4100 | 3700 | 4300 | 4000 | 3110 | 3750 | 3700 | 2600 | 2200 |
| Beginning Stocks | (000 MT) | 1351 | 1507 | 132 | 132 | 154 | 241 | 991 | 891 | 891 |
| Imports | (000 MT) | 2481 | 627 | 810 | 850 | 2277 | 3000 | 3000 | 4700 | 5500 |
| Feed Use | (000 MT) | 6200 | 5477 | 5110 | 4850 | 5300 | 6000 | 6800 | 7300 | 7700 |
| Food Use | (000 MT) | 225 | 225 | 0 | -22 | 0 | 0 | 0 | 0 | 0 |
| Domestic Use | (000 MT) | 6425 | 5702 | 5110 | 4828 | 5300 | 6000 | 6800 | 7300 | 7700 |
| Exports | (000 MT) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ending Stocks | (000 MT) | 1507 | 132 | 132 | 154 | 241 | 991 | 891 | 891 | 891 |
| Guarantee Price: | | | | | | | | | | |
| | (000 Pesos/MT) | | | | | | | | | |
| Jan | | 23.00 | 32.00 | 50.00 | 155.00 | 225.00 | 320.00 | 360.00 | 440.00 | 440.00 |
| Feb | | 23.00 | 32.00 | 50.00 | 155.00 | 225.00 | 320.00 | 360.00 | 440.00 | 440.00 |
| Mar | | 23.00 | 32.00 | 50.00 | 155.00 | 225.00 | 320.00 | 360.00 | 440.00 | 440.00 |
| Apr | | 28.70 | 32.00 | 50.00 | 155.00 | 244.60 | 320.00 | 360.00 | 440.00 | 440.00 |
| May | | 28.70 | 32.00 | 50.00 | 155.00 | 244.60 | 320.00 | 360.00 | 440.00 | 440.00 |
| Jun | | 28.70 | 50.00 | 50.00 | 155.00 | 244.60 | 320.00 | 360.00 | 440.00 | 440.00 |
| Jul | | 28.70 | 50.00 | 50.00 | 155.00 | 244.60 | 320.00 | 360.00 | 440.00 | 440.00 |
| Aug | | 28.70 | 50.00 | 50.00 | 155.00 | 244.60 | 320.00 | 360.00 | 440.00 | 440.00 |
| Sep | | 28.70 | 50.00 | 50.00 | 155.00 | 244.60 | 320.00 | 360.00 | 440.00 | 440.00 |
| Oct | | 32.00 | 50.00 | 105.00 | 225.00 | 244.60 | 320.00 | 360.00 | 440.00 | 440.00 |
| Nov | | 32.00 | 50.00 | 117.00 | 225.00 | 244.60 | 360.00 | 440.00 | 440.00 | 440.00 |
| Dec | | 32.00 | 50.00 | 117.00 | 225.00 | 244.60 | 360.00 | 440.00 | 440.00 | 440.00 |
| Nuevo Leon Price: | | | | | | | | | | |
| | (000 Pesos/MT) | | | | | | | | | |
| Jan | | | | | | | 335 | 400 | 460 | 500 |
| Feb | | | | | | | 335 | 400 | 460 | 495 |
| Mar | | | | | | | 335 | 400 | 460 | 495 |
| Apr | | | | | | | 340 | 380 | 460 | 513 |
| May | | | | | | | 390 | 420 | 480 | 513 |
| Jun | | | | | | | 410 | 435 | 500 | |
| Jul | | | | | | | 408 | 435 | 518 | |
| Aug | | | | | | | 445 | 435 | 465 | |
| Sep | | | | | | | 450 | 435 | 465 | |
| Oct | | | | | | | 450 | 460 | 465 | |
| Nov | | | | | | | 350 | 460 | 465 | |
| Dec | | | | | | | 350 | 460 | 480 | |

* Preliminary Data

Table F-1: Soybeans: Mexican Supply/Demand Balances and Explanatory Variables

| | Units | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992* |
|-------------------------------|----------------|-------|--------|--------|--------|--------|--------|--------|--------|--------|
| Soybeans: | | | | | | | | | | |
| Area Harvested | (000 Hectares) | 350 | 370 | 340 | 390 | 139 | 468 | 276 | 330 | 235 |
| Yield | (Quintals/Ha.) | 15.7 | 19.2 | 19.4 | 19.2 | 21.6 | 21.0 | 20.5 | 19.1 | 17.0 |
| Production | (000 MT) | 550 | 710 | 660 | 750 | 300 | 984 | 567 | 630 | 400 |
| Beginning Stocks | (000 MT) | 278 | 218 | 163 | 171 | 131 | 101 | 200 | 150 | 310 |
| Imports | (000 MT) | 1472 | 877 | 1092 | 956 | 1220 | 945 | 1376 | 2150 | 2200 |
| Feed Use | (000 MT) | 40 | 35 | 44 | 46 | 50 | 57 | 50 | 120 | 110 |
| Crush | (000 MT) | 2042 | 1607 | 1700 | 1700 | 1500 | 1773 | 1943 | 2500 | 2650 |
| Domestic Use | (000 MT) | 2082 | 1642 | 1744 | 1746 | 1550 | 1830 | 1993 | 2620 | 2760 |
| Exports | (000 MT) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ending Stocks | (000 MT) | 218 | 163 | 171 | 131 | 101 | 200 | 150 | 310 | 150 |
| Explanatory Variables: | | | | | | | | | | |
| Soybean Oil Domestic Use | (000 MT) | 426 | 354 | 334 | 334 | 311 | 394 | 423 | 523 | 555 |
| Soybean Meal Domestic Use | (000 MT) | 1559 | 1269 | 1305 | 1434 | 1439 | 1733 | 1688 | 2115 | 2469 |
| Soybean Oil Imports | (000 MT) | 47 | 50 | 24 | 43 | 41 | 69 | 66 | 80 | 70 |
| Soybean Oil Production | (000 MT) | 368 | 289 | 305 | 305 | 270 | 319 | 349 | 444 | 485 |
| Soybean Meal Imports | (000 MT) | 106 | 81 | 102 | 184 | 317 | 328 | 260 | 305 | 537 |
| Soybean Meal Production | (000 MT) | 1491 | 1173 | 1225 | 1225 | 1095 | 1295 | 1418 | 1822 | 1940 |
| Population | (Millions) | 76.31 | 77.94 | 79.57 | 81.20 | 82.84 | 84.49 | 86.15 | 87.84 | 89.45 |
| Pork Production | (000 MT) | 942 | 865 | 910 | 950 | 964 | 910 | 792 | 820 | 874 |
| Broiler Production | (000 MT) | 465 | 490 | 458 | 395 | 490 | 590 | 660 | 790 | 874 |
| Guarantee Price: | | | | | | | | | | |
| | (000 Pesos/MT) | 56.00 | 88.00 | 165.00 | 408.00 | 408.00 | 986.00 | 850.00 | 910.00 | 750.00 |
| Jan | | 56.00 | 88.00 | 165.00 | 408.00 | 408.00 | 986.00 | 850.00 | 910.00 | 750.00 |
| Feb | | 56.00 | 88.00 | 165.00 | 408.00 | 408.00 | 986.00 | 850.00 | 910.00 | 750.00 |
| Mar | | 56.00 | 88.00 | 165.00 | 408.00 | 408.00 | 986.00 | 850.00 | 910.00 | 750.00 |
| Apr | | 56.00 | 88.00 | 165.00 | 408.00 | 408.00 | 986.00 | 850.00 | 910.00 | 750.00 |
| May | | 56.00 | 88.00 | 165.00 | 408.00 | 408.00 | 986.00 | 850.00 | 910.00 | 750.00 |
| Jun | | 56.00 | 88.00 | 165.00 | 408.00 | 408.00 | 986.00 | 850.00 | 910.00 | 750.00 |
| Jul | | 56.00 | 88.00 | 165.00 | 408.00 | 408.00 | 986.00 | 850.00 | 910.00 | 750.00 |
| Aug | | 56.00 | 165.00 | 366.00 | 408.00 | 986.00 | 850.00 | 910.00 | 750.00 | 750.00 |
| Sep | | 88.00 | 165.00 | 408.00 | 408.00 | 986.00 | 850.00 | 910.00 | 750.00 | 750.00 |
| Oct | | 88.00 | 165.00 | 408.00 | 408.00 | 986.00 | 850.00 | 910.00 | 750.00 | 750.00 |
| Nov | | 88.00 | 165.00 | 408.00 | 408.00 | 986.00 | 850.00 | 910.00 | 750.00 | 750.00 |
| Dec | | 88.00 | 165.00 | 408.00 | 408.00 | 986.00 | 850.00 | 910.00 | 750.00 | 750.00 |

* Preliminary Data

Table F-2:
Soybean Balance:
Mexico

| | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 |
|------------------|------|------|------|------|------|------|------|------|------|------|
| Soybeans | | | | | | | | | | |
| Area harvested | 139 | 468 | 276 | 330 | 235 | 275 | 275 | 275 | 275 | 275 |
| Yield | 21.6 | 21.0 | 20.5 | 19.1 | 17.0 | 20.7 | 20.9 | 21.1 | 21.3 | 21.5 |
| Beginning Stocks | 131 | 101 | 200 | 150 | 310 | 150 | 182 | 186 | 189 | 195 |
| Production | 300 | 984 | 567 | 630 | 400 | 569 | 575 | 580 | 586 | 591 |
| Imports | 1220 | 945 | 1376 | 2150 | 2200 | 2113 | 2149 | 2213 | 2300 | 2363 |
| Total Supply | 1651 | 2030 | 2143 | 2930 | 2910 | 2832 | 2906 | 2979 | 3075 | 3149 |
| Domestic Use | 1550 | 1830 | 1993 | 2620 | 2760 | 2650 | 2720 | 2790 | 2880 | 2950 |
| Crush | 1500 | 1773 | 1943 | 2500 | 2700 | 2590 | 2660 | 2730 | 2820 | 2890 |
| Feed Use | 50 | 57 | 50 | 120 | 60 | 60 | 60 | 60 | 60 | 60 |
| Exports | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Use | 1550 | 1830 | 1993 | 2620 | 2760 | 2650 | 2720 | 2790 | 2880 | 2950 |
| Ending Stocks | 101 | 200 | 150 | 310 | 150 | 182 | 186 | 189 | 195 | 199 |

| | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 |
|---------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Soybean Meal | | | | | | | | | | |
| Yield | 0.7300 | 0.7304 | 0.7298 | 0.7288 | 0.7185 | 0.7220 | 0.7180 | 0.7179 | 0.7163 | 0.7163 |
| Beginning Stocks | 257 | 230 | 120 | 110 | 122 | 130 | 120 | 120 | 125 | 125 |
| Production | 1095 | 1295 | 1418 | 1822 | 1940 | 1870 | 1910 | 1960 | 2020 | 2070 |
| Imports | 317 | 328 | 260 | 305 | 537 | 1060 | 1496 | 1941 | 2149 | 2351 |
| Total Supply | 1669 | 1853 | 1798 | 2237 | 2599 | 3060 | 3526 | 4021 | 4294 | 4546 |
| Domestic Use | 1439 | 1733 | 1688 | 2115 | 2469 | 2940 | 3406 | 3896 | 4169 | 4421 |
| Exports | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Use | 1439 | 1733 | 1688 | 2115 | 2469 | 2940 | 3406 | 3896 | 4169 | 4421 |
| Ending Stocks | 230 | 120 | 110 | 122 | 130 | 120 | 120 | 125 | 125 | 125 |
| Soybean Oil | | | | | | | | | | |
| Yield | 0.1800 | 0.1799 | 0.1796 | 0.1776 | 0.1796 | 0.1795 | 0.1786 | 0.1795 | 0.1791 | 0.1799 |
| Beginning Stocks | 33 | 33 | 27 | 19 | 20 | 20 | 20 | 20 | 20 | 20 |
| Production | 270 | 319 | 349 | 444 | 485 | 465 | 475 | 490 | 505 | 520 |
| Imports | 41 | 69 | 66 | 80 | 70 | 90 | 95 | 95 | 100 | 100 |
| Total Supply | 344 | 421 | 442 | 543 | 575 | 575 | 590 | 605 | 625 | 640 |
| Domestic Use | 311 | 394 | 423 | 523 | 555 | 555 | 570 | 585 | 605 | 620 |
| Exports | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Use | 311 | 394 | 423 | 523 | 555 | 555 | 570 | 585 | 605 | 620 |
| Ending Stocks | 33 | 27 | 19 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| Per Capita Dom Use | 0.0038 | 0.0047 | 0.0049 | 0.006 | 0.0062 | 0.0061 | 0.0061 | 0.0062 | 0.0063 | 0.0063 |

**Table F-3:
Mexico Oilseed Balance**

| | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 |
|---------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Rapeseed | | | | | | | | | | |
| Area Harvested | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Yield | | | | | | | | | | |
| Beginning Stocks | 11 | 11 | 11 | 30 | 50 | 40 | 30 | 20 | 20 | 20 |
| Production | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Imports | 187 | 237 | 270 | 322 | 280 | 326 | 351 | 386 | 412 | 437 |
| Total Supply | 198 | 248 | 281 | 352 | 330 | 366 | 381 | 406 | 432 | 457 |
| Exports | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Crush | 187 | 237 | 251 | 302 | 290 | 336 | 361 | 386 | 412 | 437 |
| Feed Use | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Domestic Use | 187 | 237 | 251 | 302 | 290 | 336 | 361 | 386 | 412 | 437 |
| Total Use | 187 | 237 | 251 | 302 | 290 | 336 | 361 | 386 | 412 | 437 |
| Ending Stocks | 11 | 11 | 30 | 50 | 40 | 30 | 20 | 20 | 20 | 20 |
| Per Capita | 0.0023 | 0.0028 | 0.0029 | 0.0034 | 0.0032 | 0.0037 | 0.0039 | 0.0041 | 0.0043 | 0.0045 |
| Rapeseed Meal | | | | | | | | | | |
| Yield | 0.5722 | 0.5738 | 0.5697 | 0.5728 | 0.5730 | 0.5730 | 0.5730 | 0.5730 | 0.5730 | 0.5730 |
| Beginning Stocks | 5 | 5 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Production ¹⁰⁷ | 136 | 143 | 173 | 166 | 192 | 207 | 221 | 236 | 250 | |
| Imports | 1 | 7 | 1 | 1 | 9 | 8 | 8 | 9 | 9 | 10 |
| Total Supply | 113 | 148 | 147 | 174 | 175 | 200 | 215 | 230 | 245 | 260 |
| Exports | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Domestic Use | 108 | 145 | 147 | 174 | 175 | 200 | 215 | 230 | 245 | 260 |
| Total Use | 108 | 145 | 147 | 174 | 175 | 200 | 215 | 230 | 245 | 260 |
| Ending Stocks | 5 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Rapeseed Oil | | | | | | | | | | |
| Yield | 0.4011 | 0.4008 | 0.3984 | 0.3974 | 0.3975 | 0.3975 | 0.3975 | 0.3975 | 0.3975 | 0.3975 |
| Beginning Stocks | 2 | 2 | 0 | 5 | 23 | 25 | 25 | 25 | 25 | 25 |
| Production | 75 | 95 | 100 | 120 | 115 | 133 | 144 | 154 | 164 | 174 |
| Imports | 25 | 178 | 158 | 175 | 164 | 171 | 187 | 204 | 221 | 238 |
| Total Supply | 102 | 275 | 258 | 300 | 302 | 329 | 356 | 383 | 410 | 436 |
| Exports | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Domestic Use | 100 | 275 | 253 | 277 | 277 | 304 | 331 | 358 | 385 | 411 |
| Total Use | 100 | 275 | 253 | 277 | 277 | 304 | 331 | 358 | 385 | 411 |
| Ending Stocks | 2 | 0 | 5 | 23 | 25 | 25 | 25 | 25 | 25 | 25 |
| Per Capita | 0.0012 | 0.0033 | 0.0029 | 0.0032 | 0.0031 | 0.0033 | 0.0036 | 0.0038 | 0.0040 | 0.0042 |

Table G-1: Wheat: Mexican Supply/Demand Balances and Explanatory Variables

| | Units | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992* |
|-------------------------------|----------------|-------|-------|--------|--------|--------|--------|--------|--------|--------|
| Wheat: | | | | | | | | | | |
| Area Harvested | (000 Hectares) | 950 | 1050 | 1075 | 900 | 800 | 950 | 950 | 880 | 725 |
| Yield | (Quintals/Ha.) | 44.2 | 41.9 | 41.9 | 41.1 | 40.0 | 4.2 | 41.1 | 42.0 | 41.4 |
| Production | (000 MT) | 4200 | 4400 | 4500 | 3700 | 3200 | 400 | 3900 | 3700 | 3000 |
| Beginning Stocks | (000 MT) | 228 | 564 | 410 | 370 | 470 | 382 | 250 | 175 | 375 |
| Imports | (000 MT) | 491 | 92 | 463 | 752 | 1156 | 260 | 486 | 739 | 1250 |
| Feed Use | (000 MT) | 800 | 1092 | 1350 | 650 | 538 | 430 | 600 | 200 | 600 |
| Food Use | (000 MT) | 3550 | 3548 | 3650 | 3650 | 3675 | 3762 | 3861 | 4039 | 3700 |
| Domestic Use | (000 MT) | 4350 | 4640 | 5000 | 4300 | 4213 | 4192 | 4461 | 4239 | 4300 |
| Exports | (000 MT) | 5 | 6 | 3 | 52 | 231 | 200 | 0 | 0 | 0 |
| Ending Stocks | (000 MT) | 564 | 410 | 370 | 470 | 382 | 250 | 175 | 375 | 325 |
| Explanatory Variables: | | | | | | | | | | |
| Population | (Millions) | 76.31 | 77.94 | 79.57 | 81.20 | 82.84 | 84.49 | 86.15 | 87.84 | 89.45 |
| Corn Domestic Use | (000 MT) | 11800 | 11986 | 13250 | 13275 | 13429 | 14000 | 15200 | 16200 | 16300 |
| Guarantee Price: | (000 Pesos/MT) | | | | | | | | | |
| Jan | | 27.30 | 37.00 | 58.00 | 120.00 | 310.00 | 395.00 | 484.00 | 560.00 | 576.00 |
| Feb | | 27.30 | 37.00 | 58.00 | 120.00 | 310.00 | 395.00 | 484.00 | 560.00 | 576.00 |
| Mar | | 27.30 | 58.00 | 58.00 | 120.00 | 310.00 | 484.00 | 484.00 | 560.00 | 576.00 |
| Apr | | 37.00 | 58.00 | 120.00 | 310.00 | 310.00 | 484.00 | 484.00 | 560.00 | 576.00 |
| May | | 37.00 | 58.00 | 120.00 | 310.00 | 310.00 | 484.00 | 484.00 | 560.00 | 576.00 |
| Jun | | 37.00 | 58.00 | 120.00 | 310.00 | 310.00 | 484.00 | 484.00 | 560.00 | 576.00 |
| Jul | | 37.00 | 58.00 | 120.00 | 310.00 | 310.00 | 484.00 | 560.00 | 576.00 | |
| Aug | | 37.00 | 58.00 | 120.00 | 310.00 | 310.00 | 484.00 | 560.00 | 576.00 | |
| Sep | | 37.00 | 58.00 | 120.00 | 310.00 | 310.00 | 484.00 | 560.00 | 576.00 | |
| Oct | | 37.00 | 58.00 | 120.00 | 310.00 | 310.00 | 484.00 | 560.00 | 576.00 | |
| Nov | | 37.00 | 58.00 | 120.00 | 310.00 | 395.00 | 484.00 | 560.00 | 576.00 | |
| Dec | | 37.00 | 58.00 | 120.00 | 310.00 | 395.00 | 484.00 | 560.00 | 576.00 | |

* Preliminary Data

Table G-2:

Foodgrain Balance: Mexico

| | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 |
|--------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Wheat | | | | | | | | | | |
| Area Harvested | 800 | 950 | 950 | 880 | 725 | 850 | 850 | 800 | 800 | 800 |
| Yield | 40.0 | 42.1 | 41.1 | 42.0 | 37.9 | 41.5 | 41.5 | 41.5 | 41.5 | 41.5 |
| Beginning Stocks | 470 | 382 | 250 | 175 | 375 | 250 | 277 | 426 | 473 | 541 |
| Production | 3200 | 4000 | 3900 | 3700 | 2750 | 3528 | 3528 | 3320 | 3320 | 3320 |
| Imports | 1156 | 260 | 400 | 700 | 1650 | 1050 | 1150 | 1300 | 1400 | 1500 |
| Total Supply | 4826 | 4642 | 4550 | 4575 | 4775 | 4827 | 4955 | 5046 | 5193 | 5361 |
| Exports | 231 | 200 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Domestic Use | 4213 | 4192 | 4375 | 4200 | 4525 | 4550 | 4529 | 4573 | 4652 | 4712 |
| Food Use | 3675 | 3762 | 3775 | 4000 | 3925 | 4050 | 4029 | 4073 | 4152 | 4212 |
| Feed Use | 538 | 430 | 600 | 200 | 600 | 500 | 500 | 500 | 500 | 500 |
| Total Use | 4444 | 4392 | 4375 | 4200 | 4525 | 4550 | 4529 | 4573 | 4652 | 4712 |
| Ending Stocks | 382 | 250 | 175 | 375 | 250 | 277 | 426 | 473 | 541 | 649 |
| Per Capita | 0.0509 | 0.0496 | 0.0508 | 0.0478 | 0.0506 | 0.0499 | 0.0488 | 0.0485 | 0.0484 | 0.0482 |
| Rice rough | | | | | | | | | | |
| Area Harvested | 120 | 140 | 75 | 70 | 70 | 70 | 70 | 70 | 70 | 70 |
| Yield | 33.3 | 38.6 | 40.0 | 40.7 | 41.0 | 41.1 | 41.1 | 41.2 | 41.2 | 41.4 |
| Rice Milled | | | | | | | | | | |
| Beginning Stocks | 46 | 71 | 121 | 56 | 96 | 86 | 85 | 85 | 85 | 85 |
| Production | 266 | 360 | 200 | 190 | 200 | 192 | 192 | 192 | 192 | 193 |
| Imports | 189 | 130 | 175 | 300 | 250 | 279 | 287 | 293 | 300 | 306 |
| Total Supply | 501 | 561 | 496 | 546 | 546 | 557 | 564 | 570 | 577 | 584 |
| Exports | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Domestic Use | 430 | 440 | 440 | 450 | 460 | 472 | 479 | 485 | 492 | 499 |
| Total Use | 430 | 440 | 440 | 450 | 460 | 472 | 479 | 485 | 492 | 499 |
| Ending Stocks | 71 | 121 | 56 | 96 | 86 | 85 | 85 | 85 | 85 | 85 |
| Per Capita | 0.0052 | 0.0052 | 0.0051 | 0.0051 | 0.0051 | 0.0052 | 0.0052 | 0.0051 | 0.0051 | 0.0051 |

Area = thousand hectares; Yield = quintals per hectare; Production = thousand metric tons

Shaded area represents SCI forecast.

Table H-1: Beef: Mexican Supply/Usage Balances and Explanatory Variables

| | Units | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992* |
|---------------------------------|------------------|-------|--------|--------|--------|--------|--------|--------|--------|--------|
| Beef: | | | | | | | | | | |
| Production | (000 MT) | 1323 | 1339 | 1200 | 1205 | 1754 | 2140 | 1790 | 1580 | 1608 |
| Imports | (000 MT) | 0 | 7 | 1 | 4 | 15 | 40 | 60 | 120 | 150 |
| Exports | (000 MT) | 0 | 0 | 1 | 0 | 0 | 4 | 5 | 4 | 0 |
| Domestic Usage | (000 MT) | 1323 | 1346 | 1200 | 1209 | 1769 | 2176 | 1845 | 1696 | 1758 |
| Per Capita Use | (kg/Person) | 17.3 | 17.3 | 15.1 | 14.9 | 21.4 | 25.8 | 21.4 | 19.3 | 19.6 |
| Explanatory Variables: | | | | | | | | | | |
| Cattle Beginning Inventory | (000 Head) | 33853 | 32167 | 33603 | 35378 | 34999 | 31747 | 29847 | 30232 | 33482 |
| Cattle Slaughter | (000 Head) | 6890 | 7900 | 5755 | 5837 | 8468 | 10702 | 8720 | 7450 | 7500 |
| Cattle Dressed Weights | (kg/Head) | 192.0 | 169.5 | 208.5 | 206.4 | 207.1 | 200.0 | 205.3 | 212.1 | 214.4 |
| Population | (Millions) | 76.31 | 77.94 | 79.57 | 81.20 | 82.84 | 84.49 | 86.15 | 87.84 | 89.45 |
| US Beef Exports | (Million Pounds) | | 328.09 | 507.72 | 604.17 | 679.87 | 1066.9 | 1006 | 1188.4 | 1346 |
| Steer Price | (Pesos/kg) | | 100 | 188.4 | 443.9 | 3144 | 3849 | 4029 | 5452 | 5906 |
| Wholesale Prices | (Index) | 65.1 | | | | 922.5 | 1070.8 | 1320.8 | 1591.9 | 1440.9 |
| Live Broiler Price | (Pesos/kg) | | | | | 2660 | 3354 | 3595 | 3887 | 3400 |
| Steer Price Mexico City: | (Pesos/kg) | | | | | | | | | |
| Jan | | | | | | 2310 | 3813 | 3950 | 4721 | 5810 |
| Feb | | | | | | 2412 | 3759 | 4100 | 5165 | 5902 |
| Mar | | | | | | 2254 | 3939 | 3907 | 5319 | 5960 |
| Apr | | | | | | 2318 | 3786 | 3980 | 5283 | 5871 |
| May | | | | | | 2749 | 3822 | 3900 | 5296 | 6044 |
| Jun | | | | | | 2964 | 3926 | 3950 | 5414 | 5882 |
| Jul | | | | | | 3584 | 3900 | 3900 | 5451 | |
| Aug | | | | | | 3764 | 3920 | 4150 | 5549 | |
| Sep | | | | | | 3903 | 3570 | 4100 | 5739 | |
| Oct | | | | | | 3903 | 3908 | 3854 | 5726 | |
| Nov | | | | | | 3782 | 3926 | 4266 | 5927 | |
| Dec | | | | | | 3783 | 3915 | 4291 | 5830 | |

* Preliminary Data

**Table H-2:
Cattle and Beef Summary: Mexico**

| | Cattle | | | | Beef | | | | Domestic Usage | Per Capita |
|------|---------------|---------|---------|-----------|-------------|------------|---------|-----------|----------------|------------|
| | Beginning | | Exports | Slaughter | Dressed | | Imports | Exports | | |
| | Inventory | Imports | | | Weights | Production | | | | |
| | Thousand Head | | | KG/Head | Thousand KG | | | KG/Person | | |
| 1986 | 33603 | | | 5755 | 208.5 | 1200 | 1 | 1 | 1200 | 15.1 |
| 1987 | 35378 | | | 5837 | 206.4 | 1205 | 4 | 0 | 1209 | 14.9 |
| 1988 | 34999 | 213 | 822 | 8468 | 207.1 | 1754 | 15 | 0 | 1769 | 21.4 |
| 1989 | 31747 | 130 | 874 | 10702 | 200.0 | 2140 | 40 | 4 | 2176 | 25.8 |
| 1990 | 29847 | 100 | 900 | 8720 | 205.3 | 1790 | 60 | 5 | 1845 | 21.4 |
| 1991 | 30232 | 220 | 1035 | 7450 | 212.1 | 1580 | 120 | 4 | 1696 | 19.3 |
| 1992 | 33482 | 319 | 1005 | 7500 | 214.4 | 1608 | 150 | 0 | 1758 | 19.6 |
| 1993 | 32656 | 354 | 975 | 8100 | 217.2 | 1759 | 130 | 4 | 1886 | 20.7 |
| 1994 | 31310 | 360 | 975 | 7950 | 220.0 | 1749 | 160 | 4 | 1905 | 20.5 |
| 1995 | 31185 | 387 | 955 | 7200 | 222.9 | 1605 | 160 | 4 | 1760 | 18.7 |
| 1996 | 30763 | 373 | 965 | 7175 | 225.7 | 1619 | 160 | 5 | 1775 | 18.5 |
| 1997 | 30220 | 370 | 965 | 7100 | 228.5 | 1623 | 165 | 5 | 1783 | 18.3 |

Shaded area represents SCI forecast.

Table I-1: Broiler Chickens: Mexican Supply/Usage Balances and Explanatory Variables

| | Units | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992* |
|-------------------------------|--------------|-------|-------|-------|--------|-------|--------|--------|--------|--------|
| Broiler: | | | | | | | | | | |
| Production | (000 MT) | 465 | 490 | 458 | 395 | 490 | 590 | 660 | 790 | 874 |
| Imports | (000 MT) | 9 | 12 | 14 | 36 | 50 | 45 | 39 | 60 | 76 |
| Exports | (000 MT) | | | | 0 | 0 | 2 | 3 | 0 | 3 |
| Domestic Usage | (000 MT) | 474 | 502 | 472 | 431 | 540 | 633 | 696 | 850 | 947 |
| Per Capita Use | (kg/Person) | 6.2 | 6.4 | 5.9 | 5.3 | 6.5 | 7.5 | 8.1 | 9.7 | 10.6 |
| Explanatory Variables: | | | | | | | | | | |
| Population | (Millions) | 76.31 | 77.94 | 79.57 | 81.20 | 82.84 | 84.49 | 86.15 | 87.84 | 89.45 |
| Live Broiler Price | (Pesos/kg) | | | | | 2660 | 3354 | 3595 | 3887 | 3400 |
| Wholesale Prices | (Index) | 65.1 | 100 | 188.4 | 443.9 | 922.5 | 1070.8 | 1320.8 | 1591.9 | 1440.9 |
| US Broiler Price Chicago | (Cents/Lb.) | | 46.42 | 52.82 | 41.46 | 50.72 | 53.32 | 48.53 | 45.04 | 44.00 |
| Exchange Rate | (Pesos/US\$) | 192.6 | 371.7 | 923.5 | 2209.7 | 2281 | 2641 | 2945.4 | 3071 | 3125 |
| Broiler Price Live: | | | | | | | | | | |
| Mexico City: | | | | | | | | | | |
| Jan | (Pesos/kg) | | | | | 2133 | 2611 | 3800 | 4590 | 3180 |
| Feb | | | | | | 1814 | 3057 | 3800 | 4640 | 2890 |
| Mar | | | | | | 1988 | 3316 | 3800 | 3850 | 3190 |
| Apr | | | | | | 2420 | 3398 | 3180 | 3000 | 4170 |
| May | | | | | | 2420 | 3510 | 2761 | 3080 | 3840 |
| Jun | | | | | | 2484 | 3787 | 3070 | 3720 | 4450 |
| Jul | | | | | | 3660 | 3800 | 3555 | 3850 | 4240 |
| Aug | | | | | | 2634 | 3555 | 3397 | 4080 | 3140 |
| Sep | | | | | | 2922 | 2860 | 3787 | 4370 | 2950 |
| Oct | | | | | | 2482 | 3000 | 3800 | 3790 | |
| Nov | | | | | | 3395 | 3573 | 3853 | 3710 | |
| Dec | | | | | | 3562 | 3781 | 4342 | 3960 | |

* Preliminary Data

**Table I-2:
Broiler Supply and Usage: Mexico**

| | Production | Imports | Exports | Domestic Usage | Per Capita KG |
|------|------------|---------|---------|-------------------|------------------|
| 1986 | 458 | 14 | | 472 | 5.9 |
| 1987 | 395 | 36 | | 431 | 5.3 |
| 1988 | 490 | 50 | 0 | 540 | 6.5 |
| 1989 | 590 | 45 | 2 | 633 | 7.5 |
| 1990 | 660 | 39 | 3 | 696 | 8.1 |
| 1991 | 790 | 60 | 0 | 850 | 9.7 |
| 1992 | 874 | 76 | 3 | 947 | 10.6 |
| 1993 | 955 | 81 | 3 | 1033 | 11.3 |
| 1994 | 1033 | 88 | 3 | 1118 | 12.1 |
| 1995 | 1118 | 94 | 3 | 1209 | 12.8 |
| 1996 | 1200 | 91 | 3 | 1288 | 13.4 |
| 1997 | 1281 | 99 | 3 | 1377 | 14.1 |

Table J-1: Pork: Mexican Supply/Usage Balances and Explanatory Variables

| | Units | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 |
|-------------------------------|----------------|-------|--------|--------|--------|--------|--------|--------|--------|--------|
| Pork: | | | | | | | | | | |
| Production | (000 MT) | 942 | 865 | 910 | 950 | 964 | 910 | 792 | 820 | 874 |
| Imports | (000 MT) | 1 | 1 | 1 | 0 | 16 | 27 | 17 | 40 | 60 |
| Exports | (000 MT) | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 |
| Domestic Usage | (000 MT) | 942 | 865 | 910 | 950 | 980 | 937 | 809 | 859 | 934 |
| Per Capita Use | (kg/Person) | 12.3 | 11.1 | 11.4 | 11.7 | 11.8 | 11.1 | 9.4 | 9.8 | 10.4 |
| Explanatory Variables: | | | | | | | | | | |
| Hogs Beginning Inventory | (000 Head) | 13137 | 12320 | 13115 | 12357 | 10879 | 9003 | 8563 | 8593 | 9928 |
| Hogs Slaughter | (000 Head) | 13080 | 12010 | 12800 | 13200 | 13200 | 12600 | 11000 | 11350 | 11800 |
| Hogs Dressed Weights | (kg/Head) | 72.0 | 72.0 | 71.1 | 72.0 | 73.0 | 72.2 | 72.0 | 72.2 | 74.1 |
| Population | (Millions) | 76.31 | 77.94 | 79.57 | 81.20 | 82.84 | 84.49 | 86.15 | 87.84 | 89.45 |
| US Pork Exports | (Million Lbs.) | | 128 | 86 | 109 | 195 | 268 | 239 | 283 | 454 |
| Hog Price | (Pesos/kg) | | | | | 3268 | 3279 | 4101 | 4891 | 4900 |
| US Corn Price at Farm | (Cents/Bu.) | | 246.17 | 188.75 | 158.25 | 235.33 | 240.25 | 239.50 | 234.00 | 228.90 |
| Exchange Rate | (Pesos/US\$) | 192.6 | 371.7 | 923.5 | 2209.7 | 2281 | 2641 | 2945.4 | 3071 | 3125 |
| Treasury Bill Rate | (Percent) | 49.32 | 63.2 | 88.57 | 103.07 | 69.15 | 45.01 | 34.76 | 19.28 | 14.5 |
| Hog Price: | | | | | | | | | | |
| Jan | (Pesos/kg) | | | | | 2790 | 2961 | 3740 | 5031 | 4903 |
| Feb | | | | | | 2725 | 2985 | 3850 | 5081 | 4891 |
| Mar | | | | | | 2778 | 2985 | 3950 | 4843 | 4713 |
| Apr | | | | | | 3070 | 3260 | 3950 | 4502 | 4641 |
| May | | | | | | 2987 | 2995 | 3550 | 4572 | 4384 |
| Jun | | | | | | 3114 | 3398 | 3800 | 4740 | 4628 |
| Jul | | | | | | 4299 | 3544 | 4100 | 5099 | |
| Aug | | | | | | 3872 | 3454 | 4300 | 5213 | |
| Sep | | | | | | 3600 | 3200 | 4300 | 5140 | |
| Oct | | | | | | 3600 | 3467 | 4387 | 4977 | |
| Nov | | | | | | 3188 | 3204 | 4429 | 4633 | |
| Dec | | | | | | 3188 | 3893 | 4854 | 4856 | |

* Preliminary Data

**Table J-2:
Hog and Pork Summary, Mexico**

| | Hogs | | | Pork | | | Domestic Usage | Per Capita |
|------|---------------|-----------|---------|------------|---------|---------|----------------|------------|
| | Beginning | Slaughter | Dressed | Production | Imports | Exports | | |
| | Inventory | | Weights | | | | | |
| | Thousand Head | | | | | | | |
| 1986 | 13115 | 12800 | 71.1 | 910 | 1 | 1 | 910 | 11.4 |
| 1987 | 12357 | 13200 | 72.0 | 950 | 0 | 0 | 950 | 11.7 |
| 1988 | 10879 | 13200 | 73.0 | 964 | 16 | 0 | 980 | 11.8 |
| 1989 | 9003 | 12600 | 72.2 | 910 | 27 | 0 | 937 | 11.1 |
| 1990 | 8563 | 11000 | 72.0 | 792 | 17 | 0 | 809 | 9.4 |
| 1991 | 8593 | 11350 | 72.2 | 820 | 40 | 1 | 859 | 9.8 |
| 1992 | 9928 | 11800 | 74.1 | 874 | 60 | 0 | 934 | 10.4 |
| 1993 | 10500 | 12500 | 74.6 | 932 | 65 | 0 | 997 | 10.9 |
| 1994 | 11000 | 13200 | 75.1 | 991 | 70 | 0 | 1061 | 11.4 |
| 1995 | 11500 | 13900 | 75.6 | 1051 | 70 | 0 | 1121 | 11.9 |
| 1996 | 11600 | 13900 | 76.1 | 1058 | 70 | 0 | 1128 | 11.7 |
| 1997 | 11500 | 13850 | 76.6 | 1061 | 75 | 0 | 1136 | 11.6 |

Table K-1: Dairy: Mexican Supply/Demand Balances

| | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992* |
|---------------------------------|------|------|------|------|------|------|------|-------|-------|
| Fluid Milk: | | | | | | | | | |
| Cow Milk Production (000 MT) | 7410 | 6920 | 8000 | 8971 | 8830 | 8970 | 9330 | 10200 | 10700 |
| Fluid Milk Consumption (000 MT) | 4861 | 4325 | 4740 | 5025 | 3847 | 3940 | 4172 | 4507 | 4710 |
| Nonfat Dry Milk: | | | | | | | | | |
| Production (000 MT) | 3 | 3 | 3 | 4 | 5 | 6 | 9 | 9 | 12 |
| Imports (000 MT) | 100 | 145 | 161 | 150 | 200 | 240 | 288 | 48 | 160 |
| Consumption (000 MT) | 150 | 157 | 154 | 164 | 206 | 246 | 196 | 137 | 172 |
| Ending Stocks (000 MT) | 39 | 30 | 40 | 30 | 29 | 29 | 130 | 50 | 50 |

* Preliminary Data

Source: USDA World Dairy Situation

MEXICO - NATIONAL PRODUCTION OF COW MILK**1 9 8 7 - 2 0 0 0****(Million Liters)**

| <u>YEAR</u> | <u>SPECIALIZED</u> | <u>NOT SPECIALIZED</u> | <u>TOTAL</u> |
|--------------------|---------------------------|-------------------------------|---------------------|
| 1987 | 3,162 | 2,744 | 5,906 |
| 1988 | 2,927 | 2,763 | 5,690 |
| 1989 | 2,993 | 2,449 | 5,442 |
| 1990 | 3,622 | 3,086 | 6,708 |
| 1991 | 4,019 | 3,424 | 7,444 |
| 1992* | 4,139 | 3,526 | 7,666 |
| 1993* | 4,255 | 3,625 | 7,880 |
| 1994* | 4,320 | 3,680 | 8,000 |
| 1995* | 4,380 | 3,731 | 8,111 |
| 1996* | 4,439 | 3,783 | 8,222 |
| 1997* | 4,498 | 4,832 | 8,330 |
| 1998* | 4,557 | 3,882 | 8,440 |
| 1999* | 4,617 | 3,933 | 8,550 |
| 2000* | 4,679 | 3,987 | 8,666 |

Table L-1:**Crop Area: Mexico Thousand Hectares**

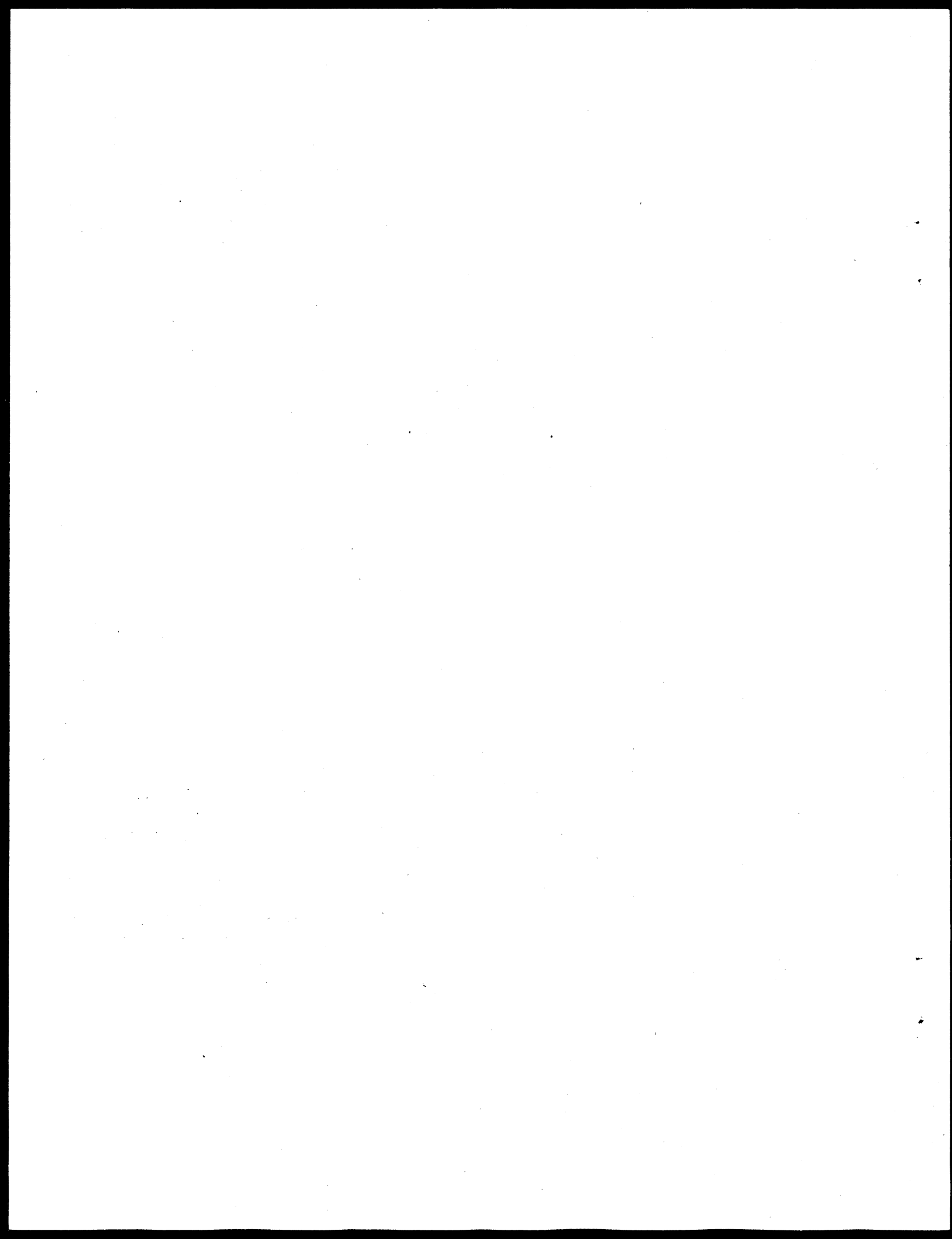
| | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 |
|--------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Corn | 6000 | 5800 | 6600 | 7700 | 7900 | 7820 | 7840 | 7860 | 7880 | 7900 |
| Sorghum | 1100 | 1300 | 1300 | 820 | 750 | 710 | 710 | 710 | 710 | 710 |
| Barley | 255 | 290 | 240 | 220 | 240 | 240 | 237 | 235 | 231 | 230 |
| Oats | 100 | 110 | 105 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Total Feedgrains | 7455 | 7500 | 8245 | 8840 | 8990 | 8870 | 8887 | 8905 | 8921 | 8940 |
| Wheat | 800 | 950 | 950 | 880 | 725 | 850 | 850 | 800 | 800 | 800 |
| Rice | 120 | 140 | 75 | 70 | 70 | 70 | 70 | 70 | 70 | 70 |
| Total Foodgrains | 920 | 1090 | 1025 | 950 | 795 | 920 | 920 | 870 | 870 | 870 |
| Soybeans | 139 | 468 | 276 | 330 | 235 | 275 | 275 | 275 | 275 | 275 |
| Safflower | 140 | 200 | 65 | 90 | 90 | 90 | 90 | 90 | 90 | 90 |
| Sesame | 100 | 79 | 47 | 68 | 80 | 100 | 100 | 100 | 100 | 100 |
| Peanuts | 85 | 85 | 81 | 79 | 80 | 90 | 95 | 100 | 100 | 100 |
| Sunflowerseed | 16 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Cotton | 255 | 188 | 186 | 250 | 42 | 50 | 50 | 50 | 50 | 50 |
| Total Oilseeds | 735 | 1032 | 667 | 829 | 539 | 617 | 622 | 627 | 627 | 627 |
| Dry Beans | 1850 | 1600 | 2200 | 1750 | 1800 | 1800 | 1825 | 1850 | 1890 | 1900 |
| Total Crops | 10960 | 11222 | 12137 | 12369 | 12124 | 12207 | 12254 | 12252 | 12308 | 12337 |

Table L-2:

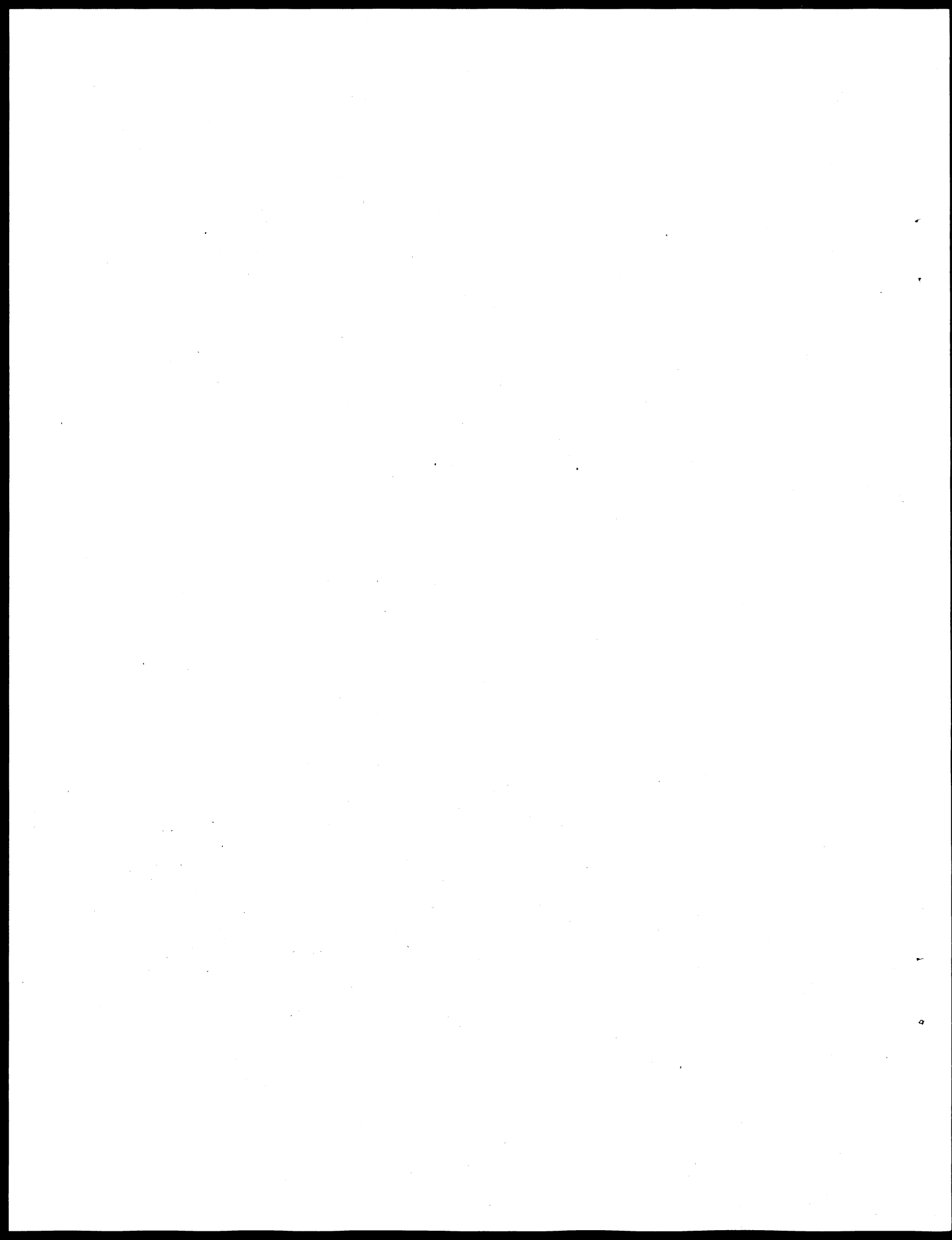
Crop Production: Mexico, Thousand Metric Tons

| | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 |
|------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Corn | 10100 | 9750 | 14100 | 14500 | 14000 | 14467 | 14739 | 15013 | 15208 | 15405 |
| Sorghum | 3110 | 3750 | 3700 | 2600 | 2200 | 2095 | 2102 | 2109 | 2116 | 2123 |
| Barley | 445 | 480 | 450 | 430 | 450 | 444 | 443 | 444 | 441 | 444 |
| Oats | 100 | 110 | 105 | 100 | 100 | 101 | 101 | 102 | 102 | 102 |
| Total Feedgrains | 13755 | 14090 | 18355 | 17630 | 16750 | 17107 | 17385 | 17667 | 17867 | 18074 |
| Wheat | 3200 | 4000 | 3900 | 3700 | 2750 | 3528 | 3528 | 3320 | 3320 | 3320 |
| Rice rough | 399 | 540 | 300 | 285 | 287 | 288 | 288 | 288 | 288 | 290 |
| Total Foodgrains | 3599 | 4540 | 4200 | 3985 | 3037 | 3815 | 3815 | 3608 | 3608 | 3610 |
| Soybeans | 300 | 984 | 567 | 630 | 400 | 569 | 575 | 580 | 586 | 591 |
| Safflower | 140 | 163 | 82 | 82 | 82 | 91 | 92 | 93 | 94 | 95 |
| Sesame | 40 | 30 | 39 | 34 | 61 | 51 | 52 | 53 | 54 | 55 |
| Peanuts | 103 | 100 | 101 | 110 | 108 | 122 | 128 | 135 | 135 | 135 |
| Sunseed | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Cottonseed | 617 | 335 | 340 | 350 | 68 | 92 | 94 | 95 | 96 | 97 |
| Total Oilseeds | 1030 | 1429 | 1018 | 1100 | 586 | 793 | 807 | 820 | 827 | 834 |
| Dry Beans | 1175 | 605 | 1300 | 1000 | 900 | 975 | 988 | 1000 | 1020 | 1024 |
| Cotton Lint | 308 | 167 | 177 | 181 | 33 | 48 | 50 | 52 | 54 | 56 |
| Cotton 000 Bales | 1416 | 769 | 813 | 831 | 150 | 220 | 230 | 239 | 248 | 257 |
| Total Crops | 19559 | 20664 | 24873 | 23715 | 21273 | 22690 | 22994 | 23096 | 23323 | 23542 |

Shaded area represents SCI forecast.



B. MEXICO CONTACTS LIST

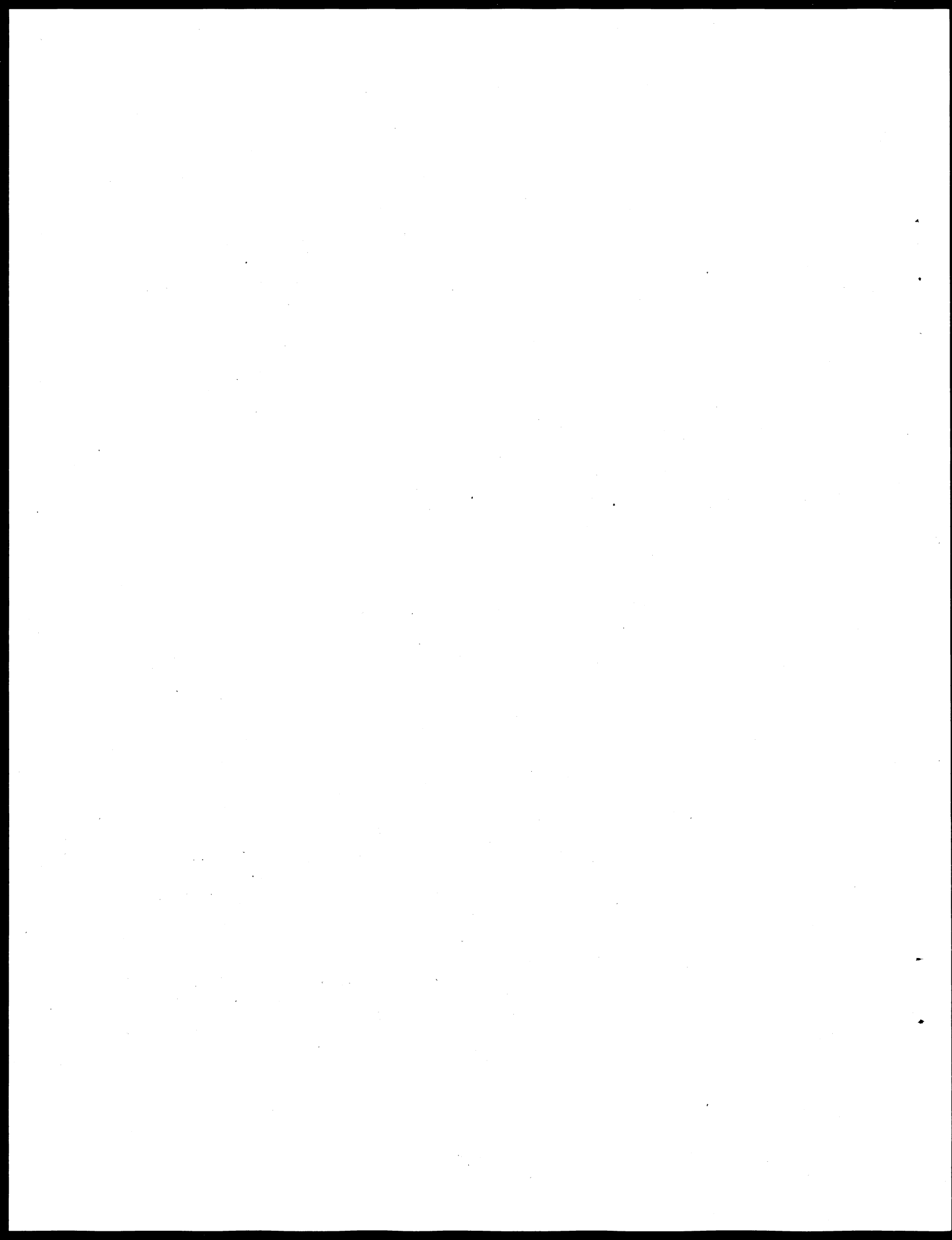


List of Individuals Interviewed in Mexico Regarding Phase I

1. Dr. Sergio Chazaro Loaiza
Nacional Financiera, SA (NAFINSA)
--National lending institution having agricultural ties--
2. Lic. Maria Antonieta Yanez Cervantes
Union Nacional de Avicultores (UNA)
--National Poultry Association of Mexico--
3. Ing. Roberto Lara Kamura
Banco Nacional de Mexico (BANAMEX)
--Marcoeconomic statistics--
4. Various individuals including present and former Agricultural Attaches
U.S. Embassy in Mexico
--Methodology of compiling data in Mexico--
5. Lic. Jorge Diaz Teran C.
Ing. Ruben Esparza Reyes
Servicio Nacional de Informacion de Mercados (SNIM)
--Information services, particularly meat prices--
6. Lic. Luis Gaya
Lic. Rosario Perez Espejo
Comision Nacional de Porcicultura (CONAPOR)
--National Pork Producers Association of Mexico--
7. Lic. Juan Jose Soto
ASERCA
--Methodology and policy regarding crop subsidies in Mexico--
8. Dr. Kenneth Schwedel
American Soybean Association - Mexico
--General information regarding sources of data--
9. Lic. Luis Crespo
U.S. Feed Grains Council
--General information regarding sources of data--
10. Ing. Carlos Zamudio
CDG (consultants to the office of Dr. Luis Tellez of SARH)
--General information regarding sources of data--

11. Lic Marina Barranon and others
SARH - Statistics Division
--Mexican Ministry of Agriculture data sourcing and dissemination--
12. C.P. Sergio Munguia
CANACINTRA
--National Association of Producers of Balanced Feeds in Mexico--
13. Lic. Enrique Dominquez Lucero
Confederacion Nacional Ganadera (CNG)
--National Association of Cattle Producers of Mexico--
14. Victor Horcasitas
--International marketing specialist in Mexico--

C. REVIEWED ARTICLES



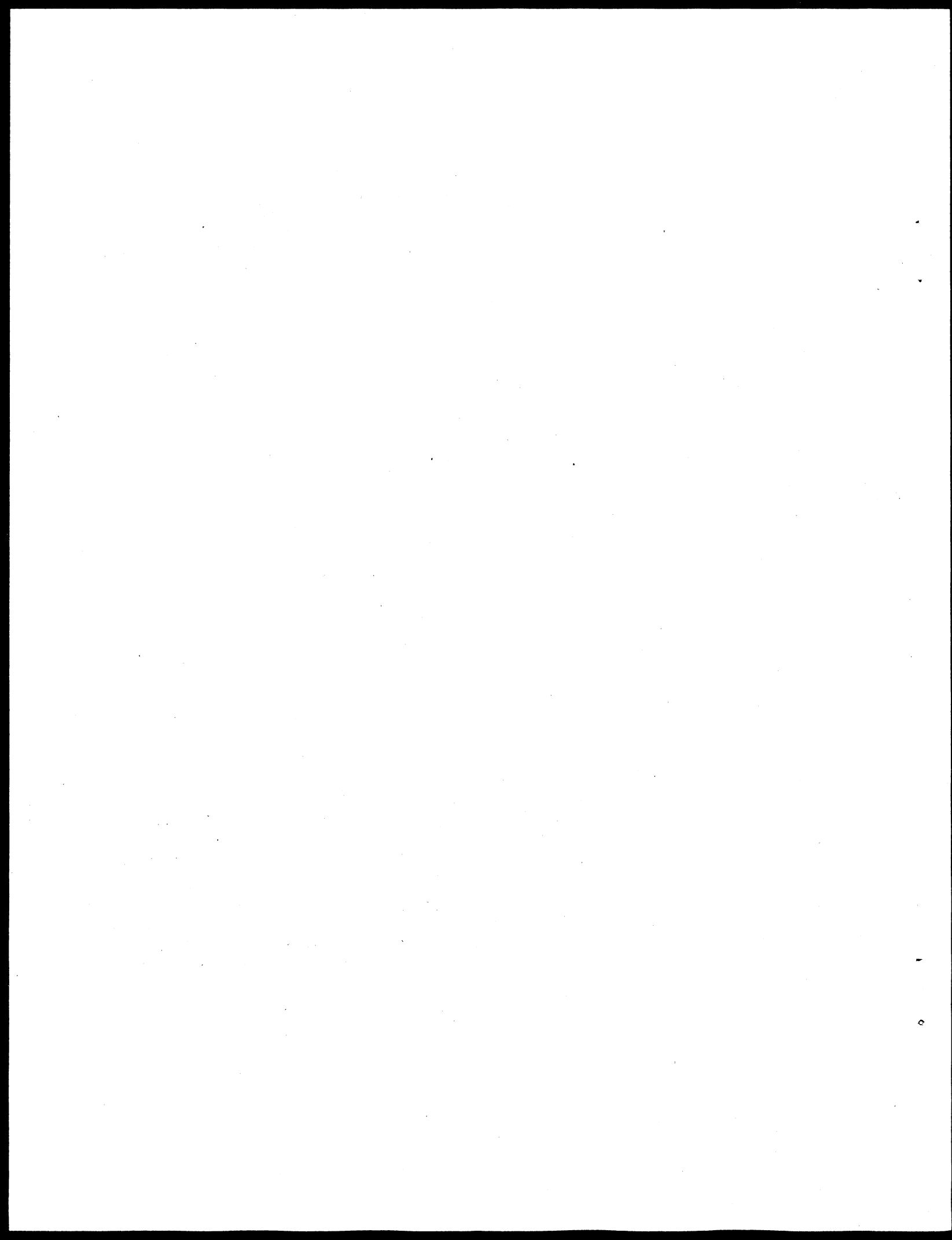
Review of Existing Studies

Background materials are in the process of being reviewed and evaluated for content which could be applied to the modeling effort required in this project. Some of the information accumulated includes:

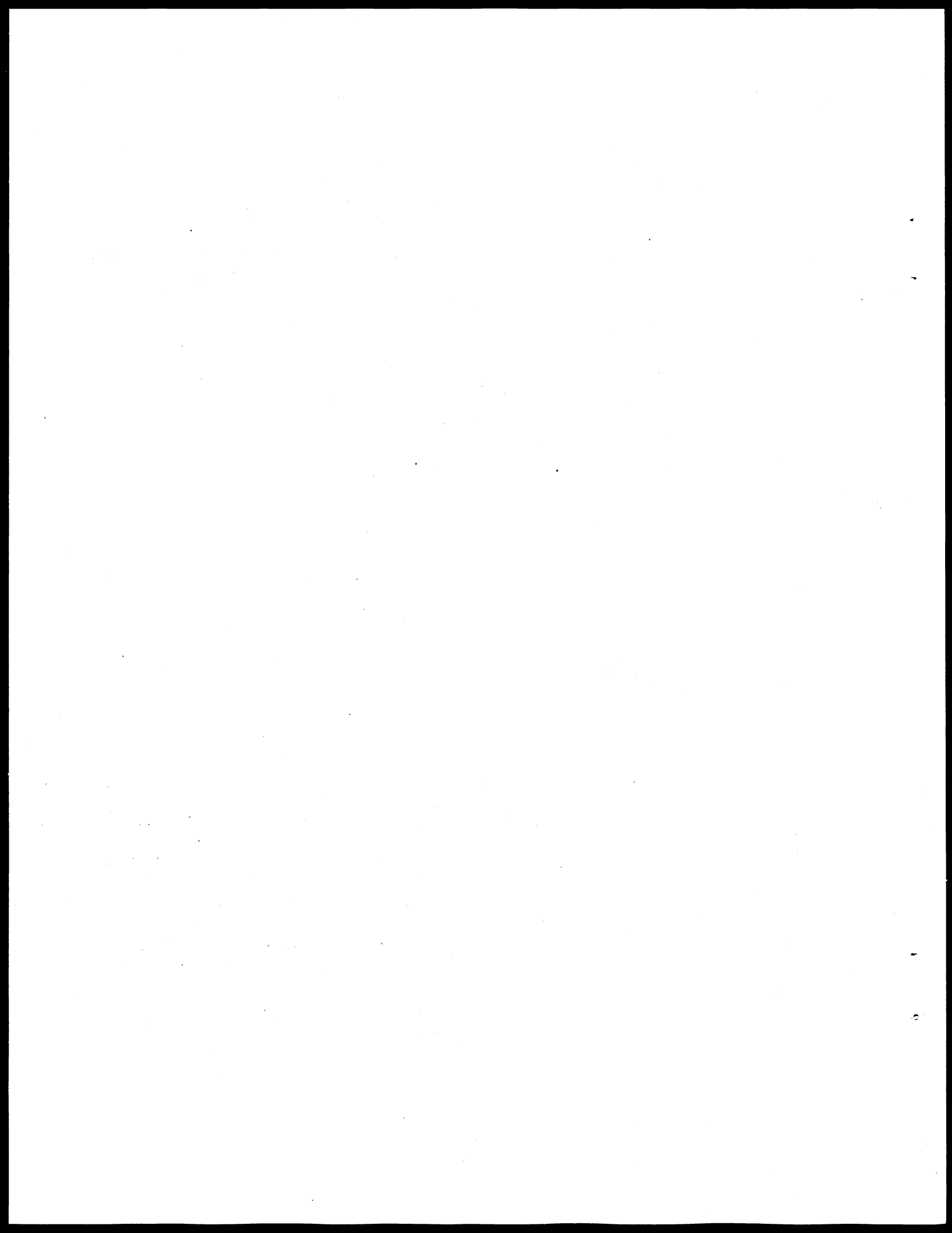
1. Nafta and Agriculture: A Review of the Economic Impacts by Tim Josling of the Food Research Institute, Stanford University, May, 1992.
2. A North American Free Trade Area and Agriculture: Issues and Impacts by Richard Barichello and Tim Josling, 1992.
3. North American Free Trade Agreement: Effects on Agriculture, An American Farm Bureau Research Foundation Project, various authors, 1991.
4. Economy-wide Modeling of the Economic Implications of a Free Trade Agreement with Mexico and a NAFTA with Canada and Mexico (USITC Publication 2508, May, 1992).

Note: This publication includes 12 symposium papers written on the above subject, include several directly addressing agricultural issues, plus comments by independent experts.

In addition to the above, the SCI team is accumulating updated work which reflects the actual agreement terms. Dr. Karl Meilke of the University of Guelph is a key member of the SCI project team, and will be heavily involved in this evaluation process under Phase II of the project. Dr. Meilke is already familiar with many of the models which have been used in evaluating the impact of the NAFTA on the three participating countries.



**D. SCOPE AND APPROACH RESTATED
FROM PROPOSAL**



SCOPE AND APPROACH

The scope of work and approach for this document were set out in our original proposal. The scope for Phase I consists of five tasks:

Phase I Documenting Institutional, Policy, and Commodity Data Sources and Previous Forecasts.

- Task 1: Establish Common Understanding of Objectives and Commodities to Be Studied
- Task 2: Collect Information on Each Commodity, Including a Review of Materials SCI Has Obtained During Previous Work on Mexico
- Task 3: Collect Information on Institutions, Domestic Policy (Including Macro) and Trade Policy, Including a Review of Materials SCI Has Obtained Previously
- Task 4: Prepare Commodity Benchmark Papers
- Task 5: Outline Framework for Completing Study Objectives 3-5 in Phase II

Each of the above tasks is discussed in detail as to purpose, scope and approach, and anticipated results. Below we restate the discussion of Phase I tasks as presented in our proposal:

Phase I Documenting Institutional, Policy, and Commodity Data Sources and Previous Forecasts.

Task I-1: Establish Common Understanding of Objectives

Purpose: The purpose of this task is to be sure our project team and your project team agree on the objectives for the project and the commodities to be analyzed and modeled (identified in the RFP as corn, wheat, barley, soybeans, rice, sorghum, dry beans, beef, pork, chicken, and dairy). It is essential to establish this common understanding to ensure that misunderstandings do not arise later in the project.

Scope and Approach: This task provides an opportunity for your team and our team to discuss and clarify the real expectations for the project. It forces final rethinking of objectives before the work gets so far along that change becomes difficult. In this way our work on your behalf will be properly focused and most effective.

To accomplish this task we would plan to have appropriate members of our team meet with your team, either at our offices or yours, for a one day session that would involve detailing the expected results from the project. This will help in putting together the most appropriate forecasting framework as our team will learn from the discussions what nuances exist and how they can best be built into a forecasting framework.

Results: We will arrive at a clear understanding of the study objectives and how they will influence the forecasting framework our team ultimately utilizes.

Task I-2: Collect Information on Each Commodity, Including a Review of Materials SCI Has Obtained During Previous Work on Mexico

Purpose: To prepare a sound forecast it is necessary to build from the best historical data base available. The purpose of this task is to identify and document the best historical data sources for the agreed upon target commodities.

Scope and Approach: The scope of this task will involve identifying and obtaining secondary source information. It would not be our intent to conduct work to gather primary data.

To obtain the data we would investigate many sources, including the USDA, Agriculture Canada, Mexican Ministry of Agriculture (SARH), Mexican Ministry of Economics and Statistics, Inter-American Development Bank, World Bank and other institutions, public or private, that compile statistics on Mexican agriculture. In addition, we would build on the data series we already maintain on Mexican agriculture.

Our team would seek out previous commodity analysis and forecast work done on target commodities. Included in the list of documents obtained will be forecasts that our company may have made for some of the target commodities.

Results: We will collect the best set of data and forecasts possible for the targeted commodities. It will provide the historical data on which forecasts for this project will be based. It will result in a report that summarizes data sources, as well as previous and existing forecasting work.

Sub-tasks under Task I-2:

- 1) Collect existing commodity information and data
- 2) Collect existing trade flow information
- 3) Review all information and data.
- 4) Survey information for preliminary commodity trends
- 5) Prepare preliminary internal summary of data sources and findings

Task I-3: Collect Information on Institutions, Domestic Policy (Including Macroeconomic) and Trade Policy, Including a Review of Materials SCI Has Obtained Previously

Purpose: To prepare a sound forecast it is necessary to build from the latest institutional and policy developments that may influence producer and consumer behavior. Therefore, the purpose of this task is to identify and document recent developments (including responses to the expected new trading environment created by NAFTA) in public sector institutions, domestic policies (including macroeconomic) and trade policies (including NAFTA) affecting the domestic production and trade of agricultural and food products. This applies particularly to the targeted commodities.

Scope and Approach: To accomplish this task our team will build on information that we have accumulated over the last three years working on several different projects on Mexican agriculture, in addition to knowledge and data we have amassed during SCI's 15 years of research services. SCI's recent work in and on Mexico has a direct bearing on the objectives stated in the RFP. A description of each of these projects is set out in the qualifications section of this proposal. This previous work has had, and still has, our staff working with key individuals in the Mexican Ministry of Agriculture and other institutions related to agriculture.

During the course of our work we have investigated many of the changes that are being made institutionally. For example, we have made analyses of the Mexican railway system, animal and plant health inspection systems, crop subsidy programs, trade flows, and other commercial issues. Furthermore, we have had to investigate many of the domestic and trade policies in place so as to understand their impacts on commodity trading between the U.S. and Mexico. Much of this work will have direct applicability to this project work.

However, because the Mexican economy is rapidly changing it will be necessary to visit with contacts in the appropriate ministries (some known to us) to find out the latest with respect to institutional and policy changes. These changes will have an impact on this project because they are likely to affect the design of an appropriate forecasting framework. Therefore, we would expect our team to travel to Mexico to make these contacts. This would very likely be done at the same time data sources are being investigated.

Results: We will provide a report that will document institutions and their actions, and policies (domestic [including macroeconomic] and trade) that will affect the development of the framework for our forecasting work.

Sub-tasks under Task I-3:

- 1) Collect existing institutional and policy information and data
- 2) Evaluate historical trends, present situation, and future implications
- 3) Evaluate significance for Canada-Mexico trade relations
- 4) Prepare preliminary internal summary of data sources and findings

Task I-4: Prepare Commodity Benchmark Papers

Purpose: The purpose of this task is to prepare a brief on each commodity. The briefs will summarize the information collected relative to each commodity identified. These benchmark papers will be used by our team as historical data and descriptive background information when we proceed towards making forecasts in subsequent tasks.

Scope and Approach: The scope of this task will be the preparation of a benchmark paper for each commodity. The approach used will be to thoroughly review all of the materials and information obtained during the previous tasks, to then sort the information by commodity, and finally to distill the most important information for each commodity down to a summary.

Results: A set of benchmark papers to be used during the performance of subsequent tasks in this report, especially the commodity forecasts, will be the result of this task. One added benefit of this task will be that our team will re-familiarize itself with the useful information gathered thus far.

Sub-tasks under Task I-4:

- 1) Prepare more-formal summaries of the data sources and findings by merging preliminary summaries from Tasks I-2 and I-3
- 2) Building on these, develop individual commodity benchmark papers

Task I-5: Outline Framework for Completing Study Objectives 3-5 in Phase II

Purpose: The purpose of this task is to define the strategy for developing the forecasting, model development, and other work involved in the Phase II tasks, given the data gathered and analysis prepared in the previous Phase I tasks.

Scope and Approach: The scope of this task is a road map for performing the work necessary to accomplish study objectives 3-5: the identification of factors driving Mexican agriculture and agricultural trade, the construction of a quantitative framework, identification of implications for Canada, commodity forecasts, estimation of the share of aggregate Mexican trade represented by Canada, and the identification of a mechanism to monitor future developments. The construction of a quantitative framework is the central objective for which the groundwork is now being laid.

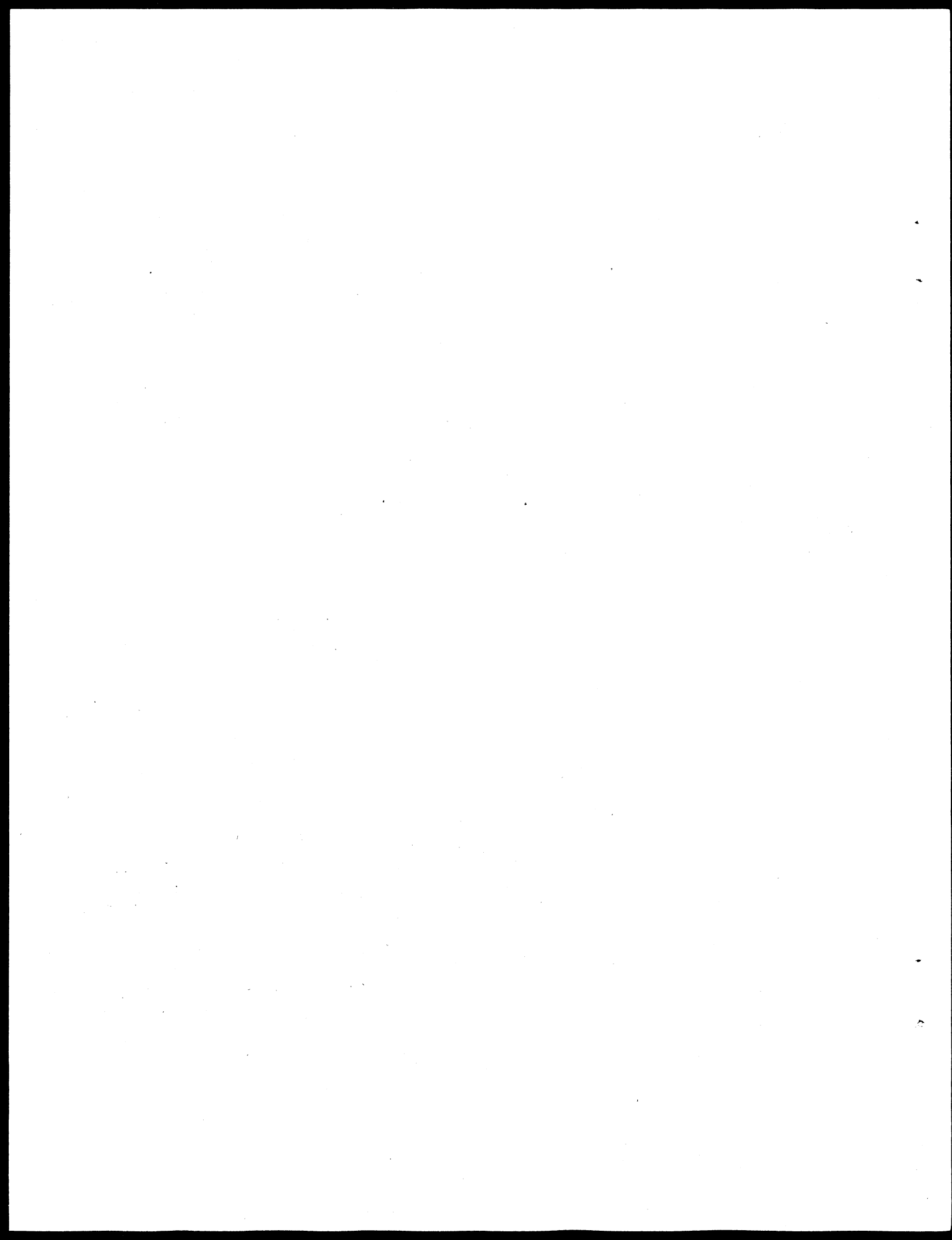
The team will need to devote attention to developing a method to forecast Canada's share of overall Mexican agricultural trade, based on competitiveness in certain commodities and other factors.

In preparing this road map, the SCI team will refer to the standard modeling approach outlined in Figure 2.

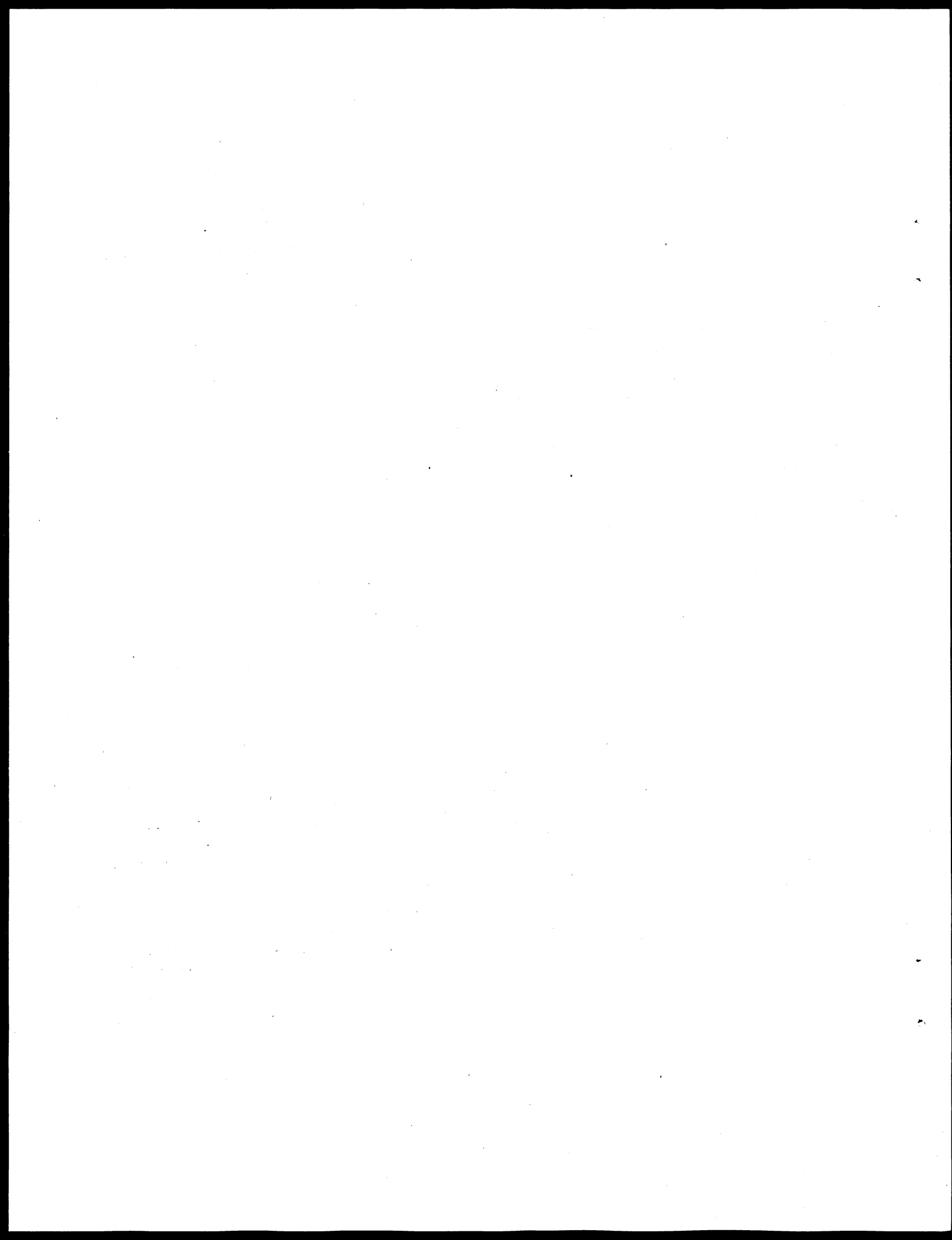
Results: We will provide a framework for the development of the analytic approach for Phase II. At this point in the project work, the SCI team will have a thorough understanding of the issues affecting each commodity as a result of the previous Phase I work, will have collected all necessary secondary data to the extent that data exists, and will have a framework for the work to be done in Phase II to arrive at the goals of this study.

Sub-tasks under Task I-5:

- 1) Assess implications contained in individual commodity benchmark papers with regards to Canada-Mexico trade relations
- 2) Define the analytical approach to merging commodity implications with forecasting objectives
- 3) Develop strategy for accomplishing objectives in Phase II



**E. INTERNATIONAL PRICE AND MEXICO FEDERAL
SUPPORT CALCULATION TABLES**

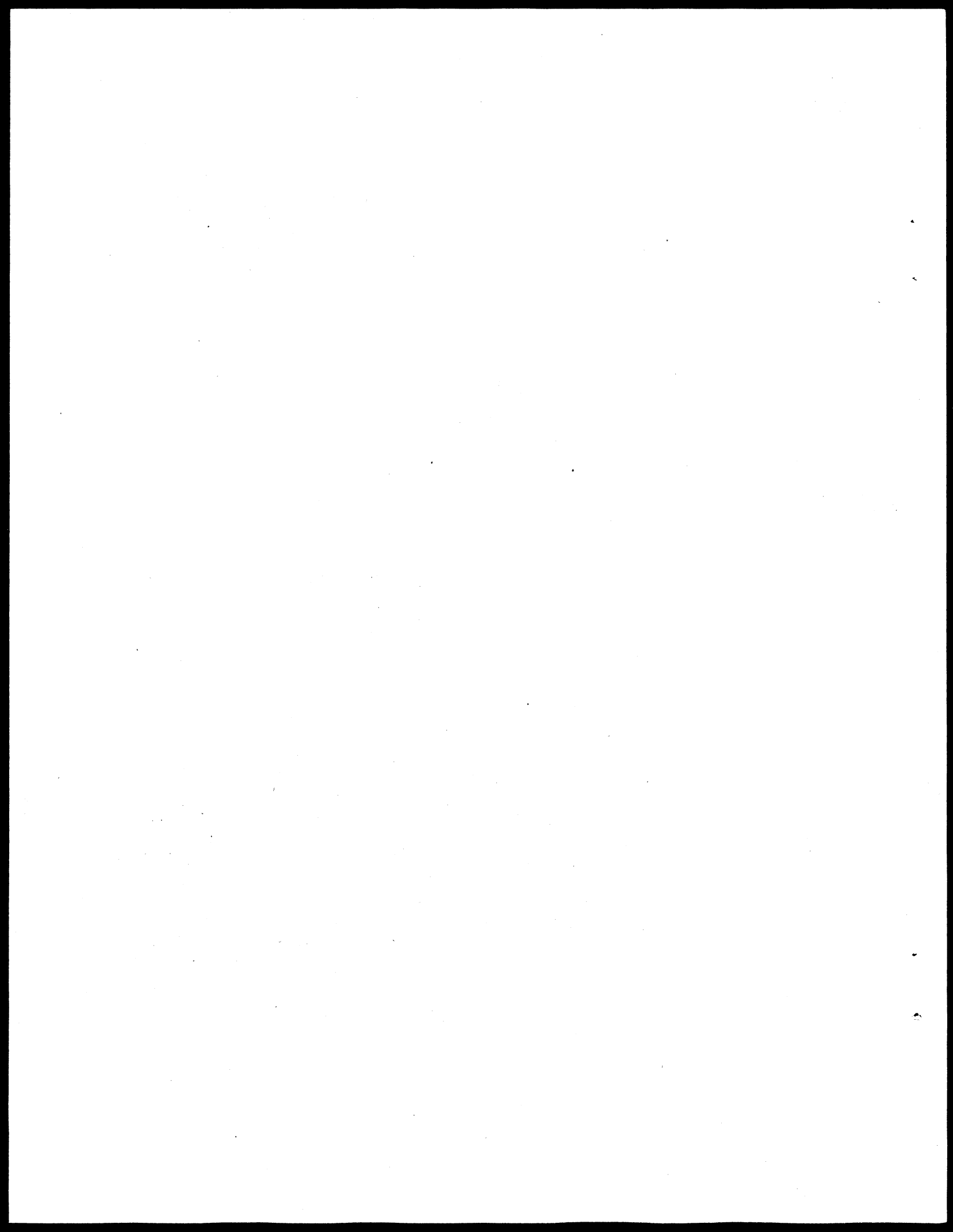


**International Price for (Commodity) Delivered
To (Destination Point in Mexico)**

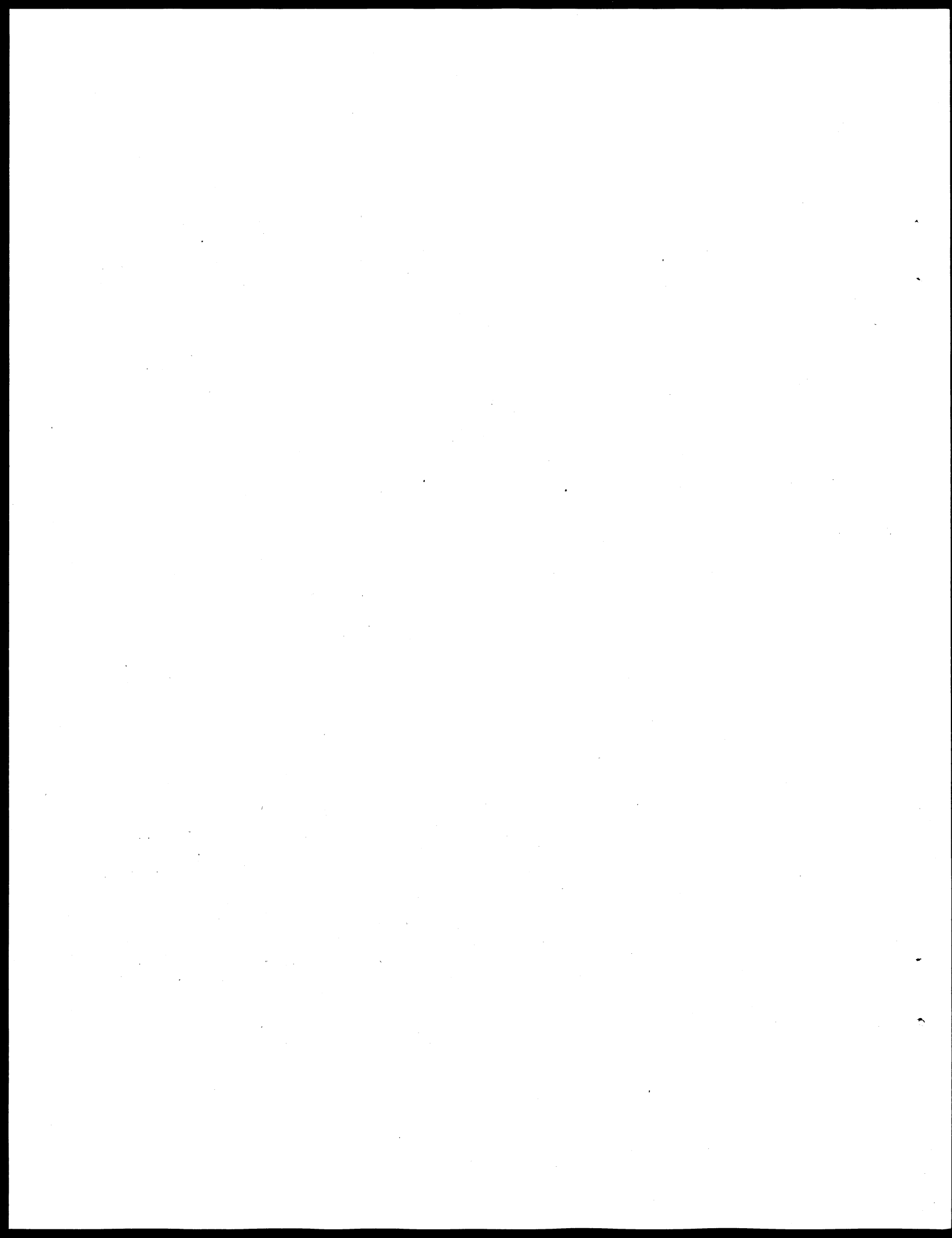
| | International Costs | | Domestic Costs | | | | Destination Prices | | | | |
|-------|----------------------|-----------------------|----------------|--------|---------|---------|--------------------|---|---|---|---|
| | International Prices | International "Basis" | Handling | Duties | Storage | Freight | J | F | . | . | D |
| Jan | | | | | | | | | | | |
| Feb | | | | | | | | | | | |
| Mar | | | | | | | | | | | |
| April | | | | | | | | | | | |
| May | | | | | | | | | | | |
| June | | | | | | | | | | | |
| July | | | | | | | | | | | |
| Aug | | | | | | | | | | | |
| Sept | | | | | | | | | | | |
| Oct | | | | | | | | | | | |
| Nov | | | | | | | | | | | |
| Dec | | | | | | | | | | | |

Federal Support Calculation

| Month | Delivered Price at Destination | National "Basis" Storage | Freight | Financing | Price Differential | Price to Producer | Federal Support Payment |
|----------|--------------------------------|--------------------------|---------|-----------|--------------------|-------------------|-------------------------|
| January | | | | | | | |
| February | | | | | | | |
| March | | | | | | | |
| . | | | | | | | |
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| December | | | | | | | |



F. GLOSSARY OF ACRONYMS

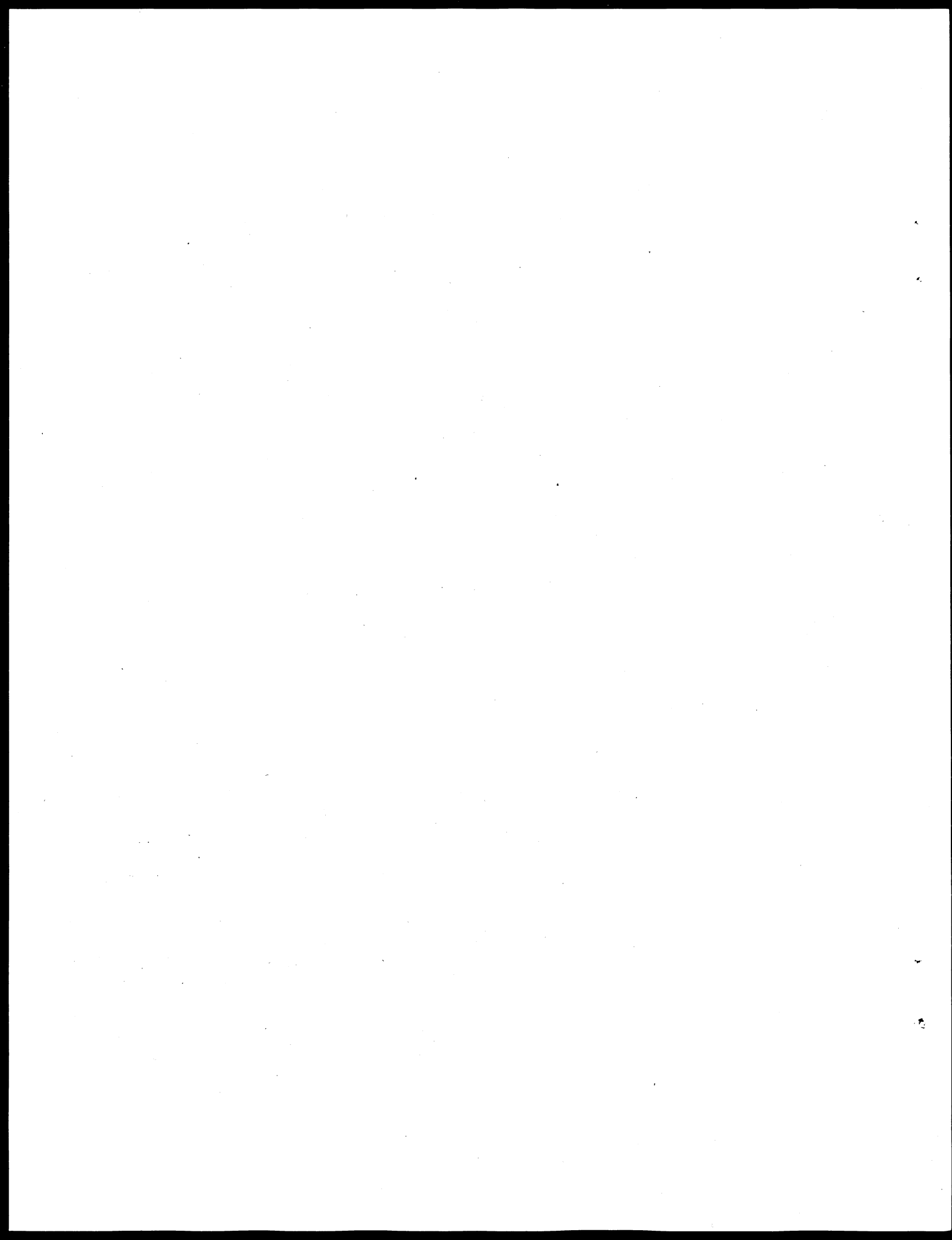


Glossary of Acronyms (Mexican entities translated)

1. ALADI - Latin American Association for Integration
2. APHIS - Animal and Plant Health Inspection Services
3. ASERCA - Mexican Agency for Support and Services
4. BANRURAL - Rural Development Bank in Mexico
5. CETES - Treasury Bills in Mexico
6. CNG - National Livestock Association of Mexico
7. CONAPOR - National Pork Producers Association of Mexico
8. CONASUPO - National Agency for General Foodstuffs Distribution to the Mexican Population
9. CUSTA - Canada / U.S. Trade Agreement
10. EEC - European Economic Community
11. FAO - Food and Agricultural Organization of the United Nations
12. FIRA - Mexican government Lending Agency to Small Farmers
13. GATT - General Agreement on Tariffs and Trade
14. GDP - Gross Domestic Product
15. IDA - Large Mexican Government Owned Slaughter Facility
16. IDB - Inter-American Development Bank
17. INEGI - Mexican National Institute for Statistics and Geography
18. IQF - Instant Quick Frozen
19. LICONSA - Mexican National Agency for Milk Production and Distribution
20. NAFINSA - Mexico's National Financing Entity on Central Bank
21. NAFTA - North American Free Trade Agreement
22. NFDM - Non-Fat Dry Milk

23. PRI - Independent Revolutionary Party of Mexico
24. RFP - Request for Proposal
25. SARH - Mexican Ministry of Agriculture and Water Resources
26. SECOFI - Mexican Ministry of Commerce and Finance
27. SNIM - National Marketing Information Service in Mexico
28. UNA - National Poultry Producers Association of Mexico
29. USDA - United States Department of Agriculture

**G. TASKS REQUIRED UNDER PHASE II
RESTATED FROM PROPOSAL**



G. Restatement of Phase II Work From Original Proposal

Phase II: Identify and Quantify Supply/Demand Factors for Target Commodities; and Prepare Quantitative Forecasts indicating Canada's Share of Mexican Agricultural Trade in Targeted Commodities.

Task II-1: Task II-1: Identify and Document Factors that Drive Supply, Demand, Price and Trade

Purpose: The purpose of this task is to identify the causal relationships that exist within the Mexican market for food and agricultural goods. The identification of complex relationships and the interplay between individual markets will provide the foundation for the management and interpretation of quantitative data.

Scope and Approach: The scope of this task is the identification of driving factors for supply/demand balances and trade for each of the main crop and livestock commodities mentioned in the RFP.

The approach used will be one which is standard for beginning the construction of a statistical model. The first step in building such a model is to lay out a conceptual (i.e., theoretical) cause-and-effect model of production, consumption, trade, stock balances, and price and possibly income considerations for each commodity. This will mold the analysis contained in the commodity benchmark papers into a set of causal relationships.

The team will utilize data series identified and collected in the Phase I tasks. Economic data for Mexico's trade partners will also be utilized to a high degree in trying to determine the structure of the existing and future Mexican marketplace; the inclusion of governmental and societal variables may play a key role in arriving at the optimum specification of the causal relationships.

Next, we will propose a theoretical model based on the variables (for which we have or can obtain data series) which we believe are driving the supply/demand balances and trade for each commodity. For example, we will likely want to determine the extent to which accurate price data is available on Mexican commodities and then match those data series with similar prices for those commodities in the U.S. and Canada to put forward relative price series which would be included in our conceptual models for trade.

Results: We will develop a set of models of the driving factors of production, consumption, trade, stocks, and price and possibly income considerations for each of the studied commodities. This will take the form of an econometric representation of Mexico's food and agriculture marketplace and trade structure. These individual commodity market models will be tested as an integrated system in subsequent tasks and, once refined, used to generate forecasts of future market conditions in the aggregate sense.

Sub-tasks under Task II-1:

- 1) Identify theoretical causal relationships within the context of the Mexican agricultural and livestock market
- 2) Review collected data, especially as set forth in commodity benchmark papers, and adapt theoretical causal relationships as necessary

Task II-2: Develop Quantitative Framework and Prepare Initial Forecasts

Purpose: The purpose of this task is multifaceted: to refine the conceptual models into statistically supportable quantitative models, suitable for preparing baseline forecasts, and to perform sensitivity analysis of external factors for each identified commodity. The initial baseline forecasts to be prepared in this task will include forecasts of the Canadian share of Mexican trade.

Scope and Approach: The scope of this task is twofold. First is the conversion from conceptual models to the actual quantitative models, and the further refinement of those models. Second is the preparation of baseline forecasts of supply/demand balances and trade flows for each commodity, in addition to the breakdown of production and consumption on a regional basis and the breakdown of Mexican trade flows according to Canada's market share.

The approach used to develop the quantitative models starts with the testing of the hypotheses behind the conceptual models proposed in Task II-1. Multiple regression techniques will be the primary procedure used for doing the analysis of historical time series. The identification of causal relationships will consider temporal factors (lagged effects) as well as spatial interactions (inter- and intra-market dynamics within a common time period). Using these standard statistical methods, the team will determine which variables are significant and should be left in the final quantitative models for each identified commodity and which factors should be excluded.

This is not the end of the development of the models, though. The models must be amended according to SCI's knowledge of the Mexican agricultural and trade situation to arrive at more real-world, rather than purely mathematical, representations. This is where the SCI team can incorporate into the quantitative models its exceptional understanding of the workings of the Mexican agricultural sector and of the implications of the NAFTA, an understanding developed cumulatively during SCI's project involvement on the ground in Mexico over the last few years. This is a distinct capability which the SCI team can offer.

For example, going by a purely mathematical model would lead one to forecast massive Mexican imports of corn, but we know that the terms of the free trade agreement are for corn imports from the United States (the U.S. has accounted for around 80 percent of Mexican corn imports over the last few years) to be restricted to a 2.5 million metric ton duty-free quota which will rise by 3 percent (compounded) annually. The SCI team will amend our model to account for this fact. Similarly, there are other qualitative factors, such as health and sanitary requirements and Mexican taste preferences, which need to be taken into consideration when refining the models.

There are several distinct concepts which the SCI team would attempt to model for each commodity, subject to Mexican data constraints. Generally, one set of concepts would be modeled for the identified crops, another set for livestock and meats, and a third set for dairy. These concepts have been referenced under the discussion covering Task I-2 (B. Findings Regarding Data Availability/Reliability).

The approach to the second part of this task, the preparation of initial forecasts of future market conditions, uses the models developed in the first part of the task. The results of the statistical analyses performed in the previous step will provide a picture of the structure of relationships between various factors in the marketplace, and will identify the forces external to the market that need to be addressed as assumptions to be provided within the forecast management process.

The approach to performing the initial forecasts will consist of the following steps. First, the historical database will be constructed in the computer. All historical data will be assimilated into one file along with the values for external assumptions during the forecast time interval. Much of the historical data will already be in place, as it is needed in the regressions run while defining the models for each sector of Mexico's agriculture economy.

Calculation of the equations will generate an initial solution. The initial solution will then be evaluated for reasonableness based on the background research done in Phase I and the knowledge base of the SCI team, checked against such realities as the corn quota cited above. Adjustments to the initial forecast will be integrated into the model, which will be run to produce a second solution--a solution that will again be checked for its ability to generate an accurate, real-world forecast. This process will be iterated until the forecast quality reaches a level in which the SCI team has confidence.

An effort will be made to break the forecasts into regional production and consumption. In Phase I, an effort will be made to ascertain regional production levels. During the present task, this data will be used to break the production forecasts down into regions. Regional consumption will also be determined. In past work, regional consumption has best been estimated by prorating forecasted national consumption for the population in each region. An effort will be made to improve on this by attempting to gather more comprehensive data during the Phase I work, but the current state of Mexican statistical reporting by government agencies will likely be a constraint when trying to make the regional forecasts more precise. Nevertheless, more precise regional forecasts for both production and consumption will be made to the extent that the necessary Mexican data are available.

Finally, a determination will be made as to what share of the forecasted Mexican trade flows Canada can expect to capture. This determination will be based upon competitiveness factors, transportation considerations, and qualitative issues such as the NAFTA terms and even Mexican taste preferences.

Results: Development of the set of quantitative models and the initial forecasts of future Mexican agricultural supply/demand balances and trade, including a regional breakdown and an initial evaluation of Canada's share of Mexican trade.

Sub-tasks under Task II-2:

- 1) Assemble data in consistent framework for analytical purposes and verify
- 2) Perform initial statistical tests on theoretical causal relationships by commodity and concept
- 3) Refine model relationships
- 4) Assemble all models into an analytic system
- 5) Use analytic system to test stability of all relationships in model and make refinements
- 6) Document and describe model and system
- 7) Develop initial baseline forecasts and impact on Canadian trade, and develop preliminary report

Task II-3: Prepare Alternative Scenario Forecasts of Production, Consumption, and Trade for Selected Commodities

Purpose: The Mexican general economy, agricultural sector, and trade system are presently in a considerable state of flux. In the task above, the SCI team will have prepared "best-guess" forecasts, but the purpose of this task is to determine what the forecasts would be if the Mexican situation does not go according to plan.

Scope and Approach: The scope of this task is the preparation of forecasts based on alternative scenario assumptions to the initial forecasts prepared in Task II-2.

The approach which will be used will start with the SCI team discussing how the macroeconomic, agricultural, and trade situation in Mexico could differ in future years from the way we assumed they would look as we prepared our initial forecasts. For example, the SCI team could make alternative assumptions as to whether Mexico's economic performance will run out of steam, whether Mexico's land tenure reforms will spur production beyond that envisioned in the baseline forecasts, whether increasing Mexican meat consumption will be supported more through imports of live animals and meat or through imports of feed grains, and other similar questions about whether and at what pace the "Mexican miracle" will continue.

Once these alternative assumptions are defined, the quantitative models will be adjusted to account for them. The models will then be run again to arrive at the alternative scenario forecasts. This task will also include analyses of what Canada's share of Mexican trade would be under the alternative scenario assumptions.

Results: We will present alternative scenario forecasts, which, when considered alongside the initial baseline forecasts, will provide a range of estimates for future Mexican supply/demand balances and trade for each commodity. This will, in turn, provide a look at how sensitive the agricultural and trade balances are to deviations in the Mexican economy and agricultural sector away from the path that Mexico appears to be following. The fact that this task will also include alternative scenario analyses of Canada's share of Mexican trade means that the results of the task include a look at how sensitive Canada's share will be to changes in the underlying assumptions.

Sub-tasks under Task II-3:

- 1) Identify conditions which may alter baseline forecasts
- 2) Develop three (3) alternative scenarios for identified conditions
- 3) Compare alternative simulation results to baseline
- 4) Evaluate implications on Canadian trade

Task II-4: Develop Monitoring System

Purpose: Upon completion of the previous tasks, SCI will have submitted the findings in report form, presented the findings in person, and turned over to Agriculture Canada computer disks containing the quantitative models that we have developed for this project. The purpose of including Task II-4 in this work is for SCI, based on its experience in collecting data for this study and on its knowledge of Mexican agriculture and Mexican statistical reporting agencies, to provide Agriculture Canada with a road map regarding how you can continue updating information on Mexico. We will try to identify the easiest way possible so you will be able to update the forecasts when you want using the existing SCI models.

Scope and Approach: The scope of this task is the recommendation of a monitoring system Agriculture Canada can use to continually update the database on Mexico and even to continue to obtain descriptive information, which is also important, on Mexico.

The approach used will be for the SCI team to review its successes and difficulties in collecting information in the Phase I tasks, and then for the SCI team to distill our information-gathering experience into specific recommendations to Agriculture Canada. These recommendations would likely take the form of detailing the agencies and publications from which we obtained the statistics used in the report, as well as suggestions based on our experience on the ground in Mexico as to which periodicals other sources of descriptive (qualitative) information are helpful.

Results: We will provide a coherent mechanism which Agriculture Canada will be able to use when it wishes to update the information and analysis in the SCI report at some point in the future.

Sub-tasks under Task II-4:

- 1) Identify dates for forecast development based on Canadian and/or Mexican trade and policy events
- 2) Establish schedule for updates of data for monitoring purposes
- 3) Provide recommendations for information sources

As a by-product of the previous nine tasks, certain trade opportunities for Canada or certain trends may be identified by the SCI team. The fact that the SCI staff represents a blend of individuals with political, academic, and business credentials improves the possibility of spotting commercial trade potential which should be brought to the attention of Agriculture Canada. The Project and Phase Leaders will be charged with the responsibility of pooling the trade information generated over eight months and, in the ninth month, putting together a comprehensive summary of opportunities and possible actions which might be of interest.

Report and Seminar Covering Phase II

The quantitative analyses and monitoring mechanism developed under Phase II will be included in a second report which will be delivered to Agriculture Canada. We will produce the report and diskettes of the quantitative model and data nine months after the signing of a contract. At or about this time, we will present a seminar to Agriculture Canada, in which the analyses, forecasting model, documentation of the model, and other Phase II work will be thoroughly explained.

Of course, our personnel will continue to be available for a reasonable period after the seminar to answer any questions which may surface regarding the operation, maintenance, or information relative to the quantitative model. However, the satisfactory delivery of the report, diskettes, and documentation, as well as the Phase II seminar, will mark the completion of our work in this project.

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