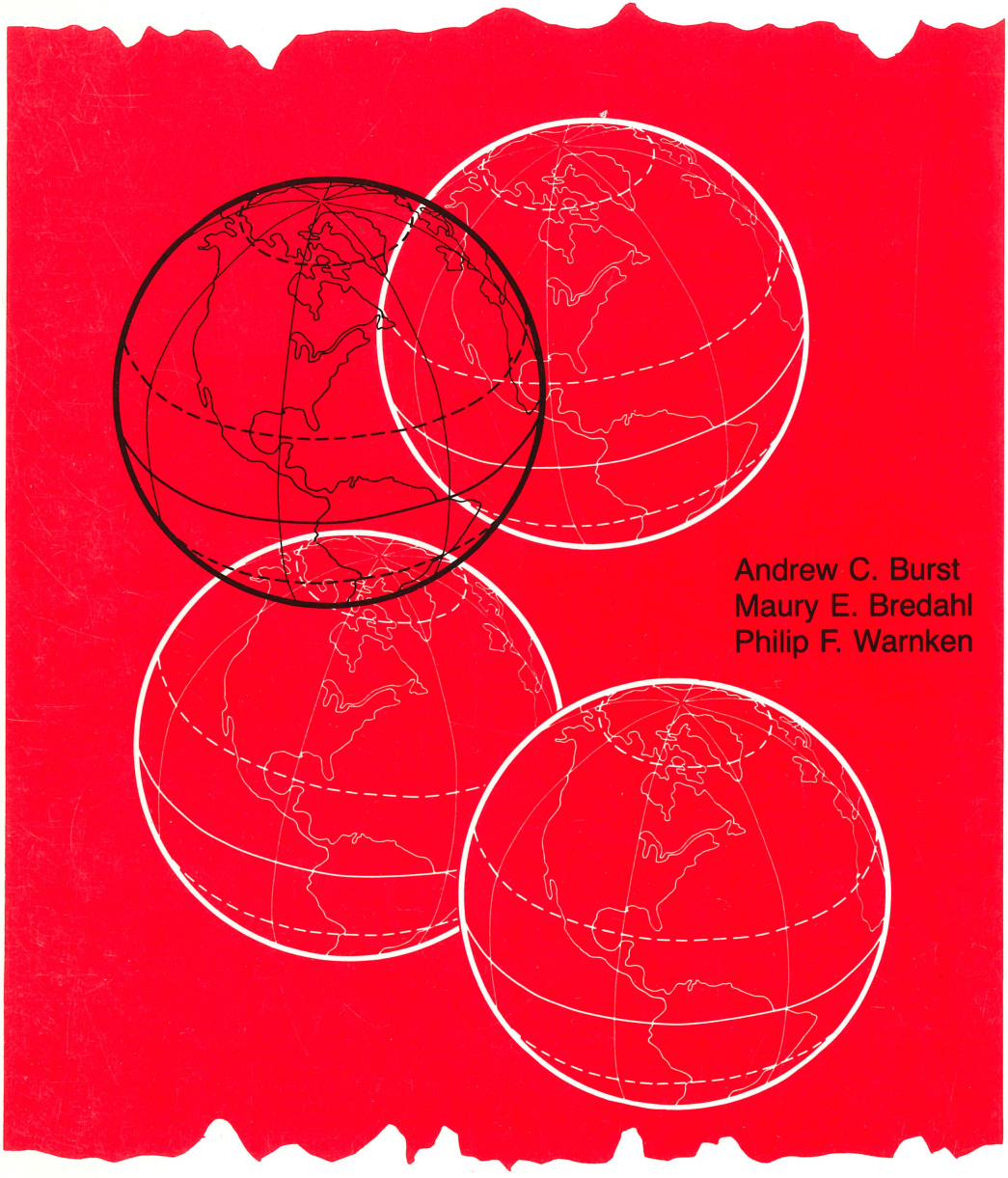
Growth and Structure of the Mexican Feedstuffs Industry



Andrew C. Burst
Maury E. Bredahl
Philip F. Warnken

University of Missouri-Columbia
College of Agriculture
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PREFACE

In the late 1970s a number of newly industrializing countries (NICs) emerged as important buyers of U.S. agricultural exports. Mexico, for example, became the third largest importer of U.S. agricultural products. Analysis of this growth in trade has proven difficult due to the lack of consistent data and information on the commercial agricultural sectors in each country. To overcome this deficiency, the Agricultural Economics Department initiated a research program emphasizing trade with NICs in general and Mexico in particular.

The Mexican research program keys on development of a cross-sectional description of the mixed feed industry and its input supply sector, and the principal uses of mixed feed, the commercial portions of the poultry, pork, dairy, and beef sectors. In addition, considerable effort was expended to develop a consistent time-series data set useful for quantitative economic analysis. The research results are published in a series of reports by the Agricultural Experiment Station of the University of Missouri.

Initial financial support was provided by the U.S. Feed Grains Council. This support enabled the research team to travel extensively in Mexico and devote considerable resources to the project. Additional support was provided by the Economic Research Service (USDA) through a cooperative agreement (#58-3J22-2-0479X). The staff of the Latin American Branch of ERS provided significant input. Finally, the Department of Agricultural Economics and the Agricultural Experiment Station of the University of Missouri has provided continuing support.

Andrew Burst, formerly a research associate in the Agricultural Economics Department of the University of Missouri-Columbia, is an analyst with the Foreign Agricultural Service, U.S.D.A. Maury E. Bredahl and Philip Warnken are associate professor and professor, respectively, of Agricultural Economics at the University of Missouri-Columbia.

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EXECUTIVE SUMMARY

The consumption of animal proteins, fueled by rapid income growth and selective consumption subsidies, grew very rapidly during the 1970s and early 1980s. Meeting the expanded demand necessitated an equally rapid expansion of animal protein production and of the inputs required in that process. This report first describes the policy environment and the marketing organization of the feed grain and oilseed complexes. Patterns and trends of growth are described. In the second section, the organization and policy environment of the mixed feed industry is described.

The intent of all discussion is to provide an overview of the process of providing inputs (through the feed grain and oilseed complexes) and transforming those raw inputs (the animal feed industry) into processed inputs for the poultry, dairy, and swine production sectors. Very little information on the mixed feed industry is available in English; information and data in Mexico is scattered among several governmental and private sector agencies. One of the principal accomplishments of this paper is the collection, integration, and interpretation of these data and information.

Feed Grain and Oilseed Complexes. An understanding of the organization and workings of the feed grain and oilseed complexes requires first an understanding of food and agricultural policy in Mexico. Agricultural policy has the conflicting goals of (1) promoting agricultural output and the incomes of small farmers and (2) providing low-priced food for poor, largely urban, consumers. The first goal is, at least partially, met by high producer prices which, without accompanying price subsidization, implies high consumer prices.

Prior to the early 1970s, price policies generally resulted in a slow growth in producer prices which in turn allowed a slow growth in consumer prices. It was a period of general surplus in agricultural products as Mexico exported many agricultural products. Due to the stagnation of agricultural output and the growing demand, the surpluses rapidly turned to deficits. As a result, agricultural prices were increased much more rapidly and increasing subsidies were needed to limit consumer price increases.

The principal instrument of price policy was the "guaranteed" producer price at which the government agency CONASUPO purchased all quantities offered. Theoretically, this price would establish a minimum market price, but for a number of reasons the market price has often fallen below the guaranteed price. Nevertheless, the market price does reflect the guaranteed price. Increases in the guaranteed prices of basic feed inputs increase directly the input costs for the mixed feed industry.

At the same time, maximum producer prices for many animal proteins -- eggs and pastuerized milk -- have not kept pace with guaranteed crop prices to minimize increases in consumer food prices. To alleviate the profit squeeze on livestock and poultry producers, several methods have been used to subsidize mixed feed processing and animal protein production. At times, domestic cereal production has been resold by CONASUPO at a "base price" which was less than the guaranteed price. Imports have also been resold at prices less than the import price. Further discounts have been provided when the fixed animal-protein output prices were grossly out of line with input costs.

In order to enforce these price policies, imports of feed inputs and of animal proteins were controlled by the government. The attempts to liberalize the import process by establishing mixed committees to control import quantities and free imports by the private sector have been frustrated by the lack of foreign exchange. As a result, importation remains solely a government activity.

The policy environment influences the marketing organization and market prices. The discussion focuses on grain sorghum, the key cereal input, and soybeans, the key oilseed input. Domestic production (concentrated in Guanajuato, Jalisco, Michoacan, and Tamaulipas) may be sold directly to CONASUPO at the guaranteed price, to intermediaries -- known as coyotes -- at a price near the guaranteed price, or directly to feed processors or livestock producers (see figure 5, page 18 for a flow diagram). The amount flowing through each channel depends on the relative surplus or shortage of the harvest. When the crop is short, very little is sold to CONASUPO and the market price will exceed the guaranteed price. The opposite holds with a large crop. Since CONASUPO and related government agencies account for about 80 percent of storage, they

play an important role when crops are larger than normal. When the crop is short, CONASUPO influences market price by importing sorghum, feed corn, and mixed feed.

The marketing channels for domestically produced oilseeds is similar to that for food and feed grains (see figure 6, page 27). Much of the oilseed production is concentrated in the northwest -- Sinaloa and Sonora -- and in Tamaulipas. The most common marketing arrangement is the direct purchase of the oilseed crop by a processor. This reflects the large-scale, commercial production of northwest Mexico. Intermediaries, as in the case for grains, purchase from smaller producers and may arrange harvest and transportation as well as marketing. CONASUPO has not consistently played a major role as a purchaser in domestic oilseed markets. It has played an important role as the importer of oilseeds.

Patterns and Trends -- Feed Grains. The patterns and trends of feed grain consumption and utilization are discussed. Second, those of domestic production are overviewed. Conclusions are then reached about the pattern and trend of imports.

Corn as a food grain dominates the consumption of cereals in Mexico. However, due to the increasing importance of feed grains, its dominance has declined significantly. Corn consumption increased at an annual rate of 3.7 percent over the past two decades reaching about 10 MMT in the later part of the 1970s. In comparison, grain sorghum, the principal animal feed, increased at an annual rate of 19.4 percent. Consumption increased from less than .5 MMT in 1960/64 to 5.8 MMT in 1980.

In aggregate, feed grain consumption increased at an annual rate of almost 11 percent in comparison to an average growth rate of 5.8 percent for total grains. The proportion of total grain consumption going to animal feed increased from 16.5 percent in 1960/64 to 34.5 percent in 1975/79; cereals utilized for animal feed increased from 1.4 MMT to 6.6 MMT.

Corn, superior to sorghum and other cereals as an animal feed, is typically a major component of animal feed in many countries. In Mexico, human consumption dominates aggregate consumption. As a consequence, a number of cultural, economic, and political barriers restrict the use of corn as an animal feed.

Domestic production of grains, increasing at an average 4.3 percent annually, has doubled over the past two decades. Note that rate of growth falls short of the 5.8 percent rate of growth of consumption. The composition of production has changed dramatically as well. From the early 1960s to the late 1970s, the share of production accounted for by corn declined from 73.4 percent to 55.8 percent; that of grain sorghum increased from 3.9 percent to 24.6 percent. Grain sorghum production increased at an annual rate of 17.9 percent as it increased from about .3 MMT to over 4 MMT. Note that the growth rate of production of grain sorghum falls short of that of consumption.

The rates of growth of production, while descriptive of the overall trend, hide the high degree of variability that has emerged in recent years. The increased variability reflects increased reliance on rainfed versus irrigated production areas.

The excess of the rates of growth of consumption over production plus the variability of production have forced Mexico to turn to international grain markets. Correspondingly, the self-sufficiency ratio has declined markedly. From the position as an exporter of cereals in the 1960s, Mexico produced only 92.4 percent of cereal needs in 1970/74 and 85.1 percent in 1975/79. In 1980, only 71 percent of cereal needs was produced domestically.

Net imports of grains increased to an average of 1.2 MMT in 1970/74 and 2.9 MMT in 1975/79. The trend was decidedly upward as imports totaled 4 MMT in 1979 and 6.4 MMT in 1980. The variability on a year-to-year basis is readily apparent. With the exception of wheat imports, almost all cereal imports were destined for animal protein production. Sorghum (2.0 MMT in 1980) and No. 3 yellow corn (a large proportion of the 3.3 MMT) were the principal components.

The United States was consistently the largest supplier of cereal imports. Argentina was the only serious competitor for the Mexican market.

Patterns and Trends -- Oilseeds. Domestic consumption of oilseeds increased at an annual rate of 4.2 percent over the past two decades. The growth has been accounted for by soybean (24.7 percent growth rate) and safflower (18 percent) consumption. This growth offset declines in consumption of traditional oilseeds (cotton, copra, and sesame). Since 1975, sunflower has emerged as an

important oilseed. In aggregate, oilseed consumption increased from 1.3 MMT in 1961/64 to 2.3 MMT in 1975/79. The trend indicated increasing consumption as the growth rate increased in the late 1970s.

Aggregate production of oilseeds increased from 1.3 MMT in 1960/64 to 1.8 MMT in 1975/79, an annual growth rate of 2.2 percent. Note that the growth rate of production falls well below the 4.2 percent growth rate of consumption. And of great concern in Mexico, the growth rate of production was declining. The rate of growth of soybean consumption (24.7 percent) greatly exceeded that of production (18.3 percent.) Clearly, the decline of the profitability of cotton exports led to a shift toward soybean production.

The divergence of production and consumption growth rates leads to a marked decline in self-sufficiency and an increase in imports. From a surplus (export) position in the 1960s, self-sufficiency in oilseed meals fell to 88 percent in 1970/74 and 71 percent in 1975/79. In 1980, slightly over half of oilseed meal needs were produced domestically. Imports, in meal equivalents, increased to 121 TMT in 1970/74 and 407 TMT in 1975/79. The trend pointed toward increasing imports given that the 1980 requirement was over 1.1 MMT.

Soybean and soymeal dominated imports with the United States as the major, almost exclusive, supplier.

The Animal Feed Industry. The rate of growth of output of the animal feed industry has exceeded that of Gross Domestic Product (GDP) and of any other sector of the economy. From 1960 to 1975, it expanded at an annual rate of 14.1 percent while GDP grew at only 6.6 percent. From 1970 to 1980, production increased from 3.8 million metric tons (MMT) to 7.4 MMT, an annual growth rate of 6.8 percent. This growth, of course, reflects growth of animal protein production. Output is concentrated in the poultry (56.3 percent of feed output), swine (23.6 percent) and dairy (16.4 percent) sectors. Beef cattle are not routinely fattened with mixed feed in Mexico.

The descriptions of the animal feed industry often divide it into three groups: (1) the commercial or organized industry, (2) producer integrates, and (3) the public sector company ALBAMEX.

The commercial industry, which accounts for slightly over half of mixed feed production, is dominated by a handful of large multinational and Mexican companies. Three multinational firms

account for almost two-thirds of the output of the commercial industry. The output of the organized industry has tended to become concentrated in dairy and swine feed as poultry producers have integrated into feed production. The multinational feed manufacturers are also involved in animal protein production through subsidies.

Producer integrates, some are included in the organized industry as well, produced about 55 percent of national output. This sector is composed of large poultry producers and representative groups (cooperatives, for example) of swine and dairy producers. Clearly, poultry producers have integrated into feed production in response to fixed input and output prices. The production of feed provides direct access to the subsidy program.

Undoubtedly in response to the concentration of production and the influence of multinational firms, the government entered the mixed feed industry in the early 1970s. It is fairly common for the government to establish semi-autonomous companies to compete with the private sector. Marketing of the public sector output provides some measure of control over the prices of mixed feed.

In addition to control in input prices and providing competition from public sector output, the Secretary of Commerce (SECOM) must approve the price schedules of feed manufacturers. The intent is to insure that feed prices reflect the subsidized prices of inputs.

Epilogue. The organization and structure of the animal feed industry during the 1970s, despite some disruptive government price policies, supported a dramatic expansion of animal protein production and consumption. The sector seemed capable of supporting further expansion with much of the increase expected in swine and dairy feeds.

The growth of animal protein production and the resulting growth in cereal and oilseed imports caused great concern in Mexico. Depending on international markets and growing animal feed -- rather than human food -- were two of the chief concerns. With the backing of increased petroleum revenues, the government embarked on a major program -- the Mexican Food System or SAM -- to increase domestic production and reduce imports. Unrealistic self-sufficiency goals were announced.

Subsequently, the decline in the price of petroleum and the foreign exchange and foreign debt crisis forced the government to abandon much of the SAM program. The domestic agricultural sector has had to adjust to significant changes in the level and composition of domestic demand. The end result of those adjustments is unclear.

This study provides a benchmark with which to compare more recent developments in Mexico. It provides description of the structure that evolved from the rapid expansion of domestic demand. That description will serve as a basis of comparison of the changes needed to accomodate a stagnant or declining demand. This study can be used to develop an understanding of the process of adjustment to more austere times in Mexico.

GROWTH AND STRUCTURE
OF THE
MEXICAN FEEDSTUFFS INDUSTRY

Andrew C. Burst
Maury E. Bredahl
Philip Warnken

INTRODUCTION

Demand for compound feed and its major ingredients, feed grains and oilseeds, has increased due to the movement toward confined animal feeding and increased domestic livestock and poultry output. Growth in balanced animal feed production and in domestic output of major agricultural feed ingredients for Mexico has been considerable.

Substantial gains in Mexican livestock and poultry production can be attributed in part to the productivity gains from increased use of compounded, balanced animal feeds. In turn, Mexico's animal feed industry has become an important user of Mexico's agricultural resources. Adoption of technologically improved animal production processes have included the use of balanced feed and other inputs.

The increased demand for animal feed has caused dramatic changes in the mix of the Mexican grain complex. Consumption and production of grain sorghum, the principal feed ingredient, have increased dramatically in the last twenty years. For example, in 1960 the area of grain sorghum harvested amounted to 113 thousand hectares and output totaled slightly over 200 thousand metric tons. By 1980, grain sorghum was Mexico's second most widely grown crop with a harvested area of 1.6 million hectares and output of 4.8 million metric tons.

Similar changes have followed in Mexico's oilseed complex. Only twenty years ago, Mexico's domestic oilseed demand was dominated by human consumption of vegetable oil. However, demand for oilseeds increasingly has reflected the expanding demand for oilseed protein meals. The increased importance of oilseed meals as feed inputs undoubtedly has been a major factor in the adoption of higher meal yielding oilseeds such as soybeans and safflower.

Although impressive, Mexico's response to the growing demand for feed inputs has not been entirely successful. Mexico, which had been relatively self-sufficient and even an intermittent net exporter of grains and oilseeds as recently as the mid-1960s, has become increasingly dependent in the 1970s and early 1980s on what have now become massive imports.

This study is divided into two major sections. The first section examines the two major types of inputs into animal feed, feed grains and oilseed meals. The policy environment, grain and oilseed

marketing organization, and patterns and trends in grain and oilseed production, consumption, trade, and prices are discussed. The second section overviews Mexico's animal feed industry, including the organization of the industry and patterns and trends in feed production.

THE FEED GRAIN AND OILSEED COMPLEXES

Inputs into animal feed are many and may vary widely depending on such factors as the supply of agricultural products, price relationships, government policy, and the demand for certain types of animal proteins by Mexican consumers. However, feed grains and grain by-products generally constitute 60 percent of the agricultural inputs while oilseed meals make up approximately 30 percent. Other inputs include animal protein meals such as fish, bone, meat, and feather meals, as well as alfalfa, pharmaceutical products, salt, and sugar (figure 1). Table 1 illustrates the wide range of inputs used by Mexico's feed industry.

This section discusses feed grains and oilseed meals, the two major categories of inputs into animal feed. The first part of this section includes a discussion of the government policy environment which affects the pricing, processing, importing, and distributing of major animal feed inputs. Included is an analysis of agricultural price policies, government subsidies, import policies, and infrastructure, all of which influence the feed industry and the feed grain and oilseed complexes. Next, the marketing organization of the feed grain and oilseed complexes is examined.

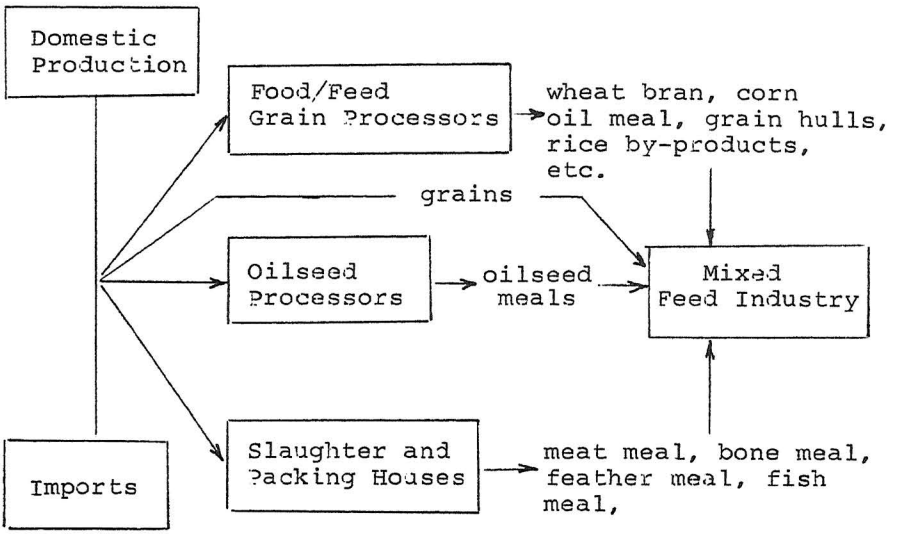
THE POLICY ENVIRONMENT

Mexico's agricultural policies are administered by numerous government agencies. Government involvement in the food/feed grain and oilseed complexes includes intervention in the pricing, marketing, and processing of many agricultural commodities, especially major feed inputs. The National Company of Subsistence Commodities (CONASUPO), the principal instrument of these policies, has several broad economic and social objectives, including the promotion of agricultural output and greater efficiency in agricultural output, and the promotion of purchasing power among low income consumers and small farm producers (Looney).

PRICE POLICY AND GOVERNMENT SUBSIDIES

Most notable among the numerous CONASUPO programs has been the establishment of guaranteed producer prices. Crops covered by guaranteed prices include grains (corn, wheat, grain sorghum, barley,

FIGURE 1: Major Feed Industry Inputs, Mexico



Source: CANACINTRA/SENAPABA 1981B, and authors.

TABLE 1: Major Feed Inputs of Agricultural Origin, Mexico

Feed Grains 60%	Animal-based Proteins
Grain sorghum	Meat meal
Corn (including #3)	Blood meal
Wheat	Bone meal
Barley	Feather meal
Oats	Fish meal
By-products	
(wheat bran, corn gluten and bran, ricehulls, etc.)	
Vegetable Proteins 30%	Others
Soybean meal	Dehydrated alfalfa
Safflower meal	Molasses
Cottonseed meal	
Sesame meal	
Sunflower meal	

Source: CANACINTRA/SENAPABA 1981A, and authors.

and rice), oilseeds (soybeans, safflower, cottonseed, sesame, coconut, and sunflower), and edible beans. Crop prices have been supported since the early 1960s for most food/feed grain crops and since the mid-1960s for major oilseed crops.

Throughout the 1960s and into the early part of the 1970s, CONASUPO guaranteed producer prices, reflecting the relative stability of prices throughout the economy, remained relatively unchanged. The corn guaranteed price, for example, increased 1.4 percent annually from 800 pesos/MT in 1960 to 940 pesos/MT in 1972. However, beginning in 1972-73, increases in guaranteed crop price levels accelerated. Between 1972 and 1982, the guaranteed price of corn increased 25 percent annually. By 1982, corn had reached a guaranteed price of 8,850 pesos/MT. Similarly, the guaranteed price of grain sorghum increased 24 percent annually from 625 pesos/MT in 1972 to 5,200 pesos/MT in 1982.

Guaranteed crop prices are established after planting, but prior to harvest, each marketing year. The marketing year varies from crop to crop; however, a 1982 guaranteed price, for example, represents the 1982/83 marketing year. The timing of the price announcement between planting and harvesting permits a more accurate appraisal of the supply situation, particularly with respect to weather (Mellor, p. 3).

The Mexican government, in an effort to offset the impact of rapidly increasing guaranteed crop prices, has established numerous input subsidies. These subsidies are meant to insure a sufficient supply of low cost inputs to livestock producers and food/feed processors. A principle input subsidy to the feed and livestock industries has been the resale of feed grains and oilseeds by CONASUPO at a base price which has sometimes fallen well below domestic free market price levels.[1/]

Feed grain and oilseed users are not required to buy from CONASUPO. However, if the base resale price is less than the commercial market price, users generally purchase as much as allowed. Generally, depending on availability, livestock producers and animal feed manufacturers purchase a portion of feed grains and oilseeds from CONASUPO. The amount of grain and/or oilseeds a livestock producer may purchase is based on a livestock census carried out every six months in areas where CONASUPO supplies inputs. Relying on

the census, CONASUPO calculates the quantities of feed inputs that may be purchased by livestock producers based on determined usage by animal types. In major regions of feed grain production, CONASUPO attempts to supply only a portion of the total needs of a livestock producer. Feed manufacturers may also purchase agricultural inputs from CONASUPO, if available, at the CONASUPO base price. Although there is little substantiating evidence, CONASUPO maintains that small-to-medium size feed and livestock producers are favored when inputs are distributed.

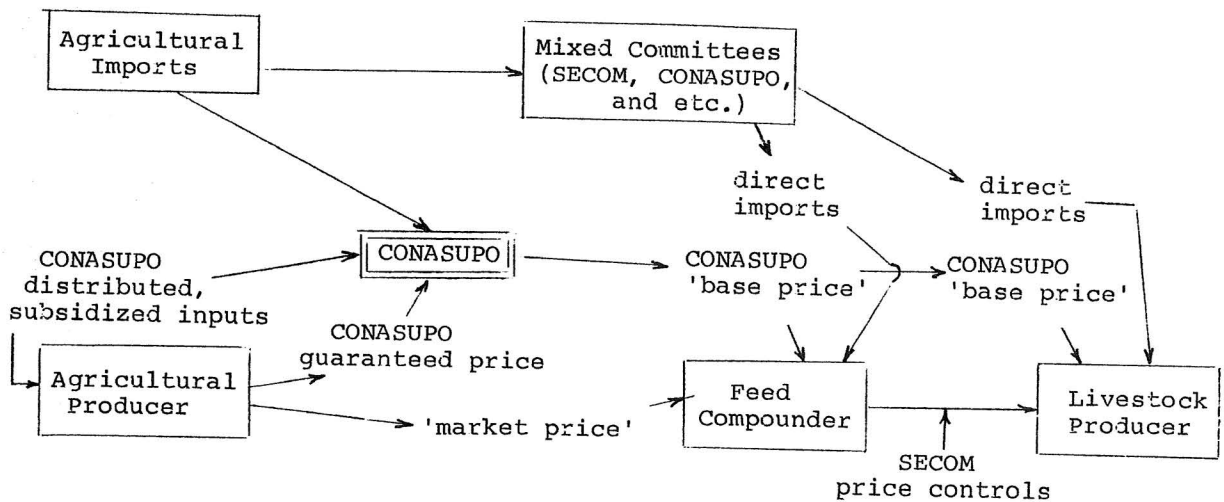
In addition, CONASUPO recently offered grain sorghum and soybeans at subsidized rates even below the CONASUPO base prices. The additional subsidy was needed to implement price controls for selected livestock products (e.g., eggs and milk). In 1981, the CONASUPO base price for grain sorghum was 3,930 pesos/MT. However, it was available to producers of egg layer and dairy cattle feed or sold directly to egg and dairy producers at 3,200 pesos/MT. Similarly, soybeans were sold at 6,425 pesos/MT, an approximate 58 percent discount of CONASUPO's 11,000 pesos/MT base price.

The Secretary of Commerce (SECOM) checks egg layer and/or dairy cattle feed production for feed manufacturers receiving these subsidies. The feed manufacturer must declare and possibly document that the subsidized inputs were used for these two types of feed (figure 2).

IMPORT POLICY

Until recently, CONASUPO was the exclusive importer and exporter of food/feed grains, oilseeds, and oilseed products. In the face of expanding agricultural product imports in 1979, the administration of Lopez Portillo liberalized agricultural imports and began issuing tenders for imported grains.[2/] This was the first time since 1976 that Mexico tendered for grain imports (Embassy 1981, p. 4). Furthermore, import agreements negotiated in 1979 by SECOM and various private sector organizations allowed for direct purchase of grains and oilseeds by Mexico's livestock, food, and feed processing industries. Under these agreements, mixed committees, including SECOM, CONASUPO, and livestock, food, and feed sector representatives, were organized to decide import policies and to

FIGURE 2: Government Involvement in Pricing, Subsidies, and Imports, Mexico



Source: Compiled by authors.

purchase commodities for private sector industries (Embassy 1981, p. 5; Starkey, p. 214).

Prior to 1979, CONASUPO grain and oilseed imports and domestic purchases were resold at the CONASUPO base resale price. The 1979 import agreements allowed food/feed processors and livestock producers to import food/feed grains, oilseeds, and oilseed meals through representative associations and in conjunction with SECOM/CONASUPO. However, CONASUPO continued to negotiate agricultural imports for government companies and small-to-medium sized feed and livestock producers.

Under this importing system, imports were resold at the world price. Thus, if import price was less than the CONASUPO base price, a defacto subsidy was provided domestic users. As a result, when the import price of an input was below domestic price, there was an incentive to utilize imported feed inputs (neglecting quality differences). On the other hand, importing feed inputs when import prices were above domestic prices was rational only when domestic stocks were in short supply and not readily available (again neglecting quality differences).

In addition to the change in policy internally, Mexico attempted to obtain a more reliable and secure external supply of agricultural products, with agricultural commodity imports reaching record levels in the early 1980s. In 1980, the first of a series of supply/purchase agreements was signed between the United States and Mexico. These agreements arranged for commodities to be obtained by CONASUPO in the open market through normal tender processes. The U.S. Department of Agriculture (USDA) agreed to assist in developing the tenders, in publicizing tender announcements, and providing other services (Starkey, p. 210). Later agreements were signed between the Unites States and Mexico in 1981 and 1982.

Also consistent with a policy of diversifying agricultural supply sources, Mexico signed supply/purchase agreements with Canada and Argentina in 1981. Unlike the U.S. agreement, however, the Argentine and Canadian agreements were on a government-to-government basis through the exporting country's grain board. This has been reported to be the Mexican government's preferred manner of importing (Embassy 1982, p. 27).

In 1982, the Mexican peso was sharply devalued, vis-a-vis, the U.S. dollar and other major currencies. As a result, world prices (and hence import prices) for most grains and oilseeds greatly exceeded domestic market prices. In a special case concerning these large relative price changes, sunflower seed was purchased prior to the devaluation, but was paid for after the devaluation. Although the issue was resolved only partially, the Mexican government agreed to subsidize most of the added cost (Embassy 1982, p. 29).

Combined with the peso devaluations of 1982, Mexico encountered severe economic and financial difficulties. The availability of foreign exchange, and hence the ability to import, became an especially critical problem. Credit extended to Mexico by the United States directly affected the ability to import agricultural products in the short run. The arrangement, made through the U.S. Commodity Credit Corporation, allowed Mexico to purchase up to U.S. $1.7 billion in U.S. agricultural products.

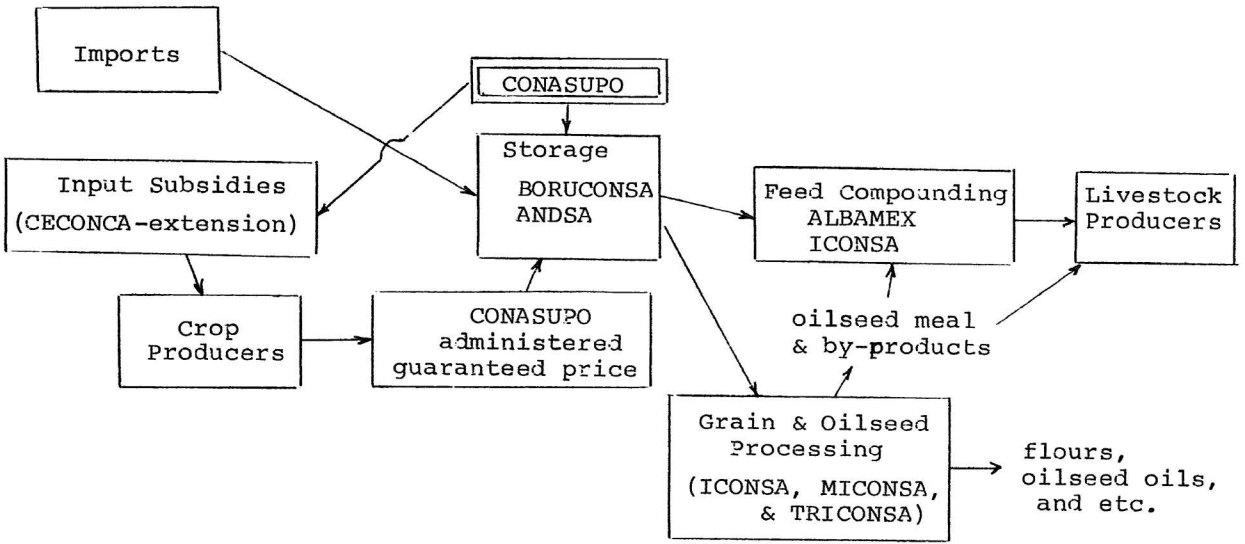
INFRASTRUCTURE POLICY

In order to guarantee reasonable grain and oilseed prices for producers and many intermediate and end users, CONASUPO has operated a myriad of business enterprises and has invested in substantial amounts of associated supporting infrastructure. For example, for guaranteed crop prices to be effective, the Mexican government (through CONASUPO) must purchase a portion of the domestic crop output. This intervention has required investment in collection, storage, and distribution facilities. Furthermore, CONASUPO and other government-funded companies operate in diverse industries such as corn (MICONSA), wheat (TRICONSA), oilseed (ICONSA), and dairy processing (LICONSA) in addition to the animal feed industry (ALBAMEX and ICONSA) (figure 3).

Storage

Warehouses operated by CONASUPO, distributed throughout production and population centers of the country, store agricultural products purchased by CONASUPO. There are two basic types of CONASUPO storage facilities. The first is BORUCONSA, which are CONASUPO's rural warehouses, or bodegas rurales. These bodegas rurales are located primarily in agricultural production areas of the country. Although

FIGURE 3: Government Agencies Involved in Major Feed Input Markets, Mexico



Source: Compiled by authors.

they primarily store domestically produced grains and oilseeds, they also store inputs intended for distribution to agricultural producers. These bodega rurales are often organized around local ejidos. The other type of CONASUPO storage facility is ANDSA (Almacenes Nacional del Deposito, S.A.). ANDSA storage facilities are less numerous but generally larger than the facilities of BORUCONSA. ANDSA warehouses, in some cases located in major production areas, are primarily central collection points for both domestically produced and imported agricultural products. Table 2 lists the 1978 storage capacity of both BORUCONSA and ANDSA. In addition to BORUCONSA and ANDSA storage capacity, government-operated agencies and companies, such as Alimentos Balanceados de Mexico, S.A. (ALBAMEX), Industrias CONASUPO, S.A. (ICONSA), and others, have their own warehouse or silo storage facilities. CONASUPO accounts for approximately 39 percent of total national storage capacity, ANDSA 28 percent, and BORUCONSA 11 percent (CONASUPO 1981, p. 26).

During the severe grain and oilseed shortages of 1979-81, the lack of agricultural storage and mechanized transfer (loading and unloading) facilities became especially apparent. Although the acute problems that developed during that period have subsided somewhat, severe shortages of both facilities still exist. As a result, large quantities of domestically produced and imported grains and oilseeds are stored out-of-doors. Furthermore, large quantities of grain and oilseeds are often loaded in bags rather than handled in bulk at CONASUPO storage facilities.

Attempts have been made to increase CONASUPO's storage capacity and to mechanize loading and unloading. Some expansion has been gained through new construction and modernization of existing CONASUPO facilities. CONASUPO has also expanded their storage capacity by purchasing storage facilities from private companies.

Transportation and Distribution

In addition to inadequate storage and transfer facilities for domestically produced and imported agricultural products, Mexico's transportation system, especially the railroad system (a government-owned and -operated monopoly), is deficient. Again, these deficiencies became vividly apparent during the grain and oilseed shortages of 1979-81 when severe bottlenecks developed in the Mexican

TABLE 2: CONASUPO Storage Capacity by Type of Storage Facility, Mexico, 1978 (metric tons)

ANDSA (total)	4,234,225
Owned	3,821,160
Rented	413,065
BORUCONSA (total)	1,520,224
Owned	1,242,981
Rented	173,608
Lent	24,707
Cones[a/]	78,928
Total CONASUPO storage capacity	5,754,449

Source: SPP 1981.

a/ Type of storage facility.

distribution system. Feed supplies were distributed erratically and the shortage resulted in widespread disruptions of livestock and poultry production.

During 1980 and 1981, railroad boxcars transporting domestically produced and imported grain, oilseeds, and oilseed products were backed-up for extended periods of time as a result of delays in unloading. In 1980, for example, the USDA's Foreign Agricultural Service (USDA/FAS) estimated that there were well over 50,000 U.S. railcars in Mexico. By the end of that year, the problem had become so acute that the government of Mexico placed an embargo on railcar entry from the United States.

Ships transporting imported grains and oilseeds were also backed-up at both east and west coast sea ports. Since most Mexican ports are designed for export purposes, they generally lack modern mechanized unloading equipment. Agricultural products must often be offloaded by mechanical shovels into boxcars, hopper cars, or directly onto trucks. Long lines of trucks waiting to load and unload at storage facilities and ocean ports are a common occurrence. A further disincentive for transporting grains and oilseeds by truck is the high cost.

MARKETING ORGANIZATION

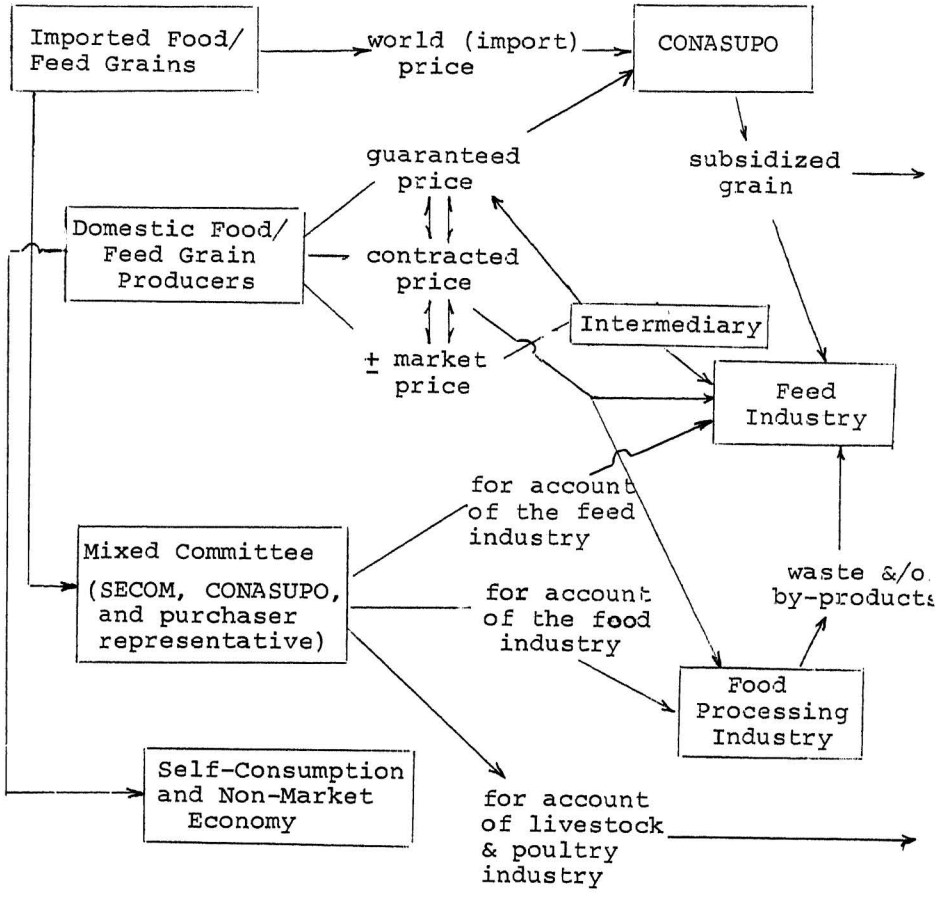
THE FEED GRAIN COMPLEX

Figure 4 outlines the major marketing channels through which domestically produced and imported feed grains flow. The flow-diagram illustrates the movement of grain from producers and/or importers to end users (in this case feed and/or livestock industries). The marketing of grain sorghum (figure 5) will be stressed in this discussion because of its importance as Mexico's major feed grain. However, the marketing system of all domestically produced and imported grains (with the exception of wheat and rice) is roughly similar to that of grain sorghum. The role of CONASUPO, a major participant in the Mexican feed grain complex, is discussed further in this section.

Location of Production

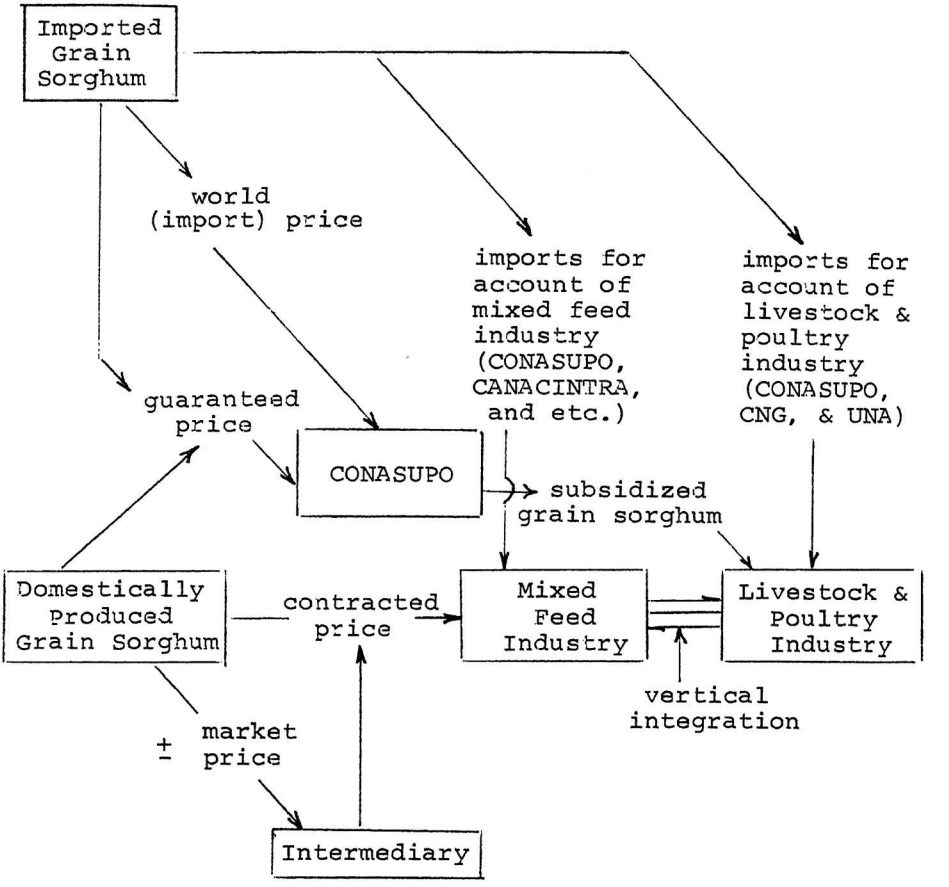
Domestic production of Mexican feed grains, principally grain sorghum, is concentrated within three regions of the country. For

FIGURE 4: Major Marketing Channels for Domestically Produced and Imported Food/Feed Grain, Mexico



Source: Compiled by authors.

FIGURE 5: Major Marketing Cahnnels for Domestically Produced and Imported Grain Sorghum, Mexico



Source: Compiled by authors.

example, according to the Secretary of Agriculture and Water Resources (SARH), 83.2 percent of 1978-80 domestic grain sorghum output that averaged 4.3 MMT annually was produced in the state of Tamaulipas on the northeastern Gulf coast; in the states of Guanajuato, Michoacan, and Jalisco in the west central region; and in the state of Sinaloa in the northwestern region (table 3). Corn production, which is Mexico's second most important feed grain, is similarly concentrated (table 4). These regions, in particular the west central region, have become important areas in the manufacturing of feed and marketing of feed grains and have subsequently developed into major centers for confined animal feeding.

Marketing of Domsetically Produced Feed Grains

Domestic producers of feed grains have various avenues available for marketing their crops. They can sell their grain to CONASUPO at the guaranteed price, sell to intermediaries at somewhere around the domestic market price, sell directly to a feed compounder, or, in the case of food grains, directly to a food processor. The amount of grain that is marketed through CONASUPO, through intermediaries, or directly to the feed compounder depends on domestic supply and demand, corresponding price relationships, and the ability of the purchaser to buy and/or store the grain.

Private purchasing of grain crops at local market prices predominates in the Mexican grain market. The majority of domestically produced grain sorghum moves through intermediaries known in Mexico as coyotes. Intermediaries purchase grain sorghum and other feed/food grains from the many smaller, isolated producers and may assist producers in harvesting and transporting crops. Assistance may possibly even extend to distribution and sales of grain producers' inputs. Intermediaries also offer a minimal amount of paper work and cash payments, which are especially important to smaller grain producers. As a result, intermediaries are able to purchase domestically produced grain at a price that is often below the guaranteed price offered by CONASUPO. In addition, modern storage and transfer facilities for domestically produced grain sorghum, especially in the central region of the country, are advantages that many intermediaries provide.

TABLE 3: Principal Grain Sorghum Producing States, Mexico, 1977/78-1979/80

State	1977/1978 TMT	Production Percentage of National Total	1978/1979 TMT	Production[a/] Percentage of National Total	1979/1980 TMT	Production[a/] Percentage of National Trade
Guanajuato	1,117.4	26.6	834.1	20.9	877.4	18.2
Jalisco	726.1	17.3	450.9	11.3	962.0	20.0
Michoacan	344.1	8.2	243.8	6.1	549.4	11.4
Tamaulipas	1,052.7	25.1	1,585.7	39.7	1,462.4	30.4
Total top 4	3,557.3	84.8	3,411.9	85.4	3,851.2	80.0
National total	4,193.0	100.0	3,994.1	100.0	4,812.4	100.0

Sources: 1978: SARH/DGEA, December 1980;
1979: SARH/DGEA, August 1981;
1980: SARH/DGEA, June 1982.

Note: Years are crop years. For example, the 1980 year equals 1979/80 crop year.

a/ Preliminary figures are used.

TABLE 4: Principal Corn Producing States, Mexico, 1979/80 (thousand metric tons)

State	Production	Percentage of National Total
Jalisco	2,268.1	18.3
Mexico	1,875.4	15.1
Chiapas	1,200.0	9.7
Puebla	825.4	6.7
Veracruz	822.6	6.6
Michoacan	807.6	6.5
Tamaulipas	693.5	5.6
Guerrero	604.3	4.9
Oaxaca	507.8	4.1
Guanajuato	347.1	2.8
Hidalgo	315.0	2.5
Total top 11	10,266.8	82.9
Others	2,116.4	17.1
National total	12,383.2	100.0

Source: SARH/DGEA, June 1982.

Note: Figures for 1980 are preliminary; years are crop years. For example, the 1980 year equals 1979/80 crop year.

Intermediaries sell in larger homogenous lots to feed compounders or to CONASUPO. In some cases, intermediaries may also serve as representative grain buyers for feed producers and/or food processors.

Another marketing channel of feed grains is direct purchase of crops by feed producers or representatives. Large private feed manufacturers or integrated confined feeders generally have available storage and therefore are able to purchase feed grains directly from crop producers. Although contracts may be made between feed compounders and feed grain producers, they are not common.

Since 1965, CONASUPO also has purchased a percentage of the domestic grain crop. Table 5 presents estimates of the quantity and the percentage of domestic corn, wheat, grain sorghum, and barley purchased by CONASUPO over the 1965-79 period.

CONASUPO's purchases of wheat have been substantial, averaging 39.8 percent of domestic production annually 1965-79. The range of wheat purchased during this period varied from a low of 19.5 percent of national production in 1977 to a high of 67.9 percent in 1965. CONASUPO's domestic corn purchases, which were also substantial, averaged 1.4 MMT annually and varied from the 1975 low of 4.1 percent to the 1979 high of 22.3 percent of total Mexican corn production. CONASUPO's domestic grain sorghum purchases, although not as large as those for wheat or corn, averaged 265.4 TMT annually and varied from little or no purchases (1965, 1971-74) to a maximum of 22.6 percent of national production in 1967. Finally, CONASUPO's domestic barley purchases averaged 6.6 TMT and never exceeded 11.3 percent of domestic production over the 1965-79 period. Although there would seem to be a bias in CONASUPO's domestic purchases toward food grains (wheat and corn), CONASUPO's grain sorghum purchases are sizable.

The portion of the domestic grain crop that is marketed through CONASUPO, through intermediaries, or directly to feed producers or food processors depends on domestic supply and demand factors and on the differential between CONASUPO and domestic market prices. If domestic grain availability is low, market prices may exceed the CONASUPO guaranteed price. In this case, grain producers generally obtain higher prices by selling their crops to intermediaries or to food/feed manufacturers rather than by selling to CONASUPO at the guaranteed price. However, if domestic grain production and/or

TABLE 5: CONASUPO's Domestic Purchases of Corn, Grain Sorghum, Wheat, and Barley, Mexico, 1965-1979

Year(s)	Domestic Corn Purchases (TMT)	Domestic Corn Purchases Percentage of Domestic Production	Domestic Wheat Purchases (TMT)	Domestic Wheat Purchases Percentage of Domestic Production	Domestic Grain Sorghum Purchases (TMT)	Domestic Grain Sorghum Purchases Percentage of Domestic Production	Domestic Barley Purchases (TMT)	Domestic Barley Purchases Percentage of Domestic Production
1965	1,861.0	20.8	1,459.3	67.9	0	0.0	0	0
1966	1,811.9	19.5	859.0	52.1	210.1	14.9	0	0
1967	1,911.4	22.2	1,100.8	51.9	377.4	22.6	0	0
1968	1,776.9	19.6	826.2	39.7	274.6	12.9	0	0
1969	1,463.1	17.4	1,195.0	51.4	115.8	4.7	0	0
1970	1,194.2	13.4	1,147.8	42.9	189.8	6.9	0	0
1971	1,535.7	15.7	682.0	37.2	(0)	(0)	0	0
1972	1,437.6	15.6	634.7	35.1	6.4	0.2	34.7	11.3
1973	804.4	9.3	922.3	44.1	31.7	1.0	4.8	1.2
1974	799.3	9.9	725.6	26.0	35.4	1.0	1.2	0.5
1975	345.0	4.1	1,066.3	38.1	333.5	8.1	(0)	(0)
1976	968.1	12.1	1,492.8	44.4	482.6	12.0	56.7	10.3
1977	1,430.4	14.1	478.9	19.5	655.6	15.3	1.6	0.4
1978	4,808.8	16.5	1,205.0	43.3	571.2	13.6	(0)	(0)
1979	1,952.1	22.3	785.0	34.5	697.6	18.8	0	0
Annual averages								
1965/69	1,765.1	19.9	1,088.1	52.7	195.6	11.6	0	0
1970/74	1,150.2	13.0	708.3	31.6	52.7	1.8	8.1	2.8
1975/79	1,300.9	14.7	1,005.6	36.8	548.1	13.4	11.7	2.6
1965/79	1,405.4	15.6	934.0	39.8	265.4	6.8	6.6	2.0

Source: CONASUPO purchases from CONASUPO as quoted in SPP 1981. Domestic production: Table 15.

Note: (0) signifies less than 50 MT.

supply is high and market prices fall, an increased percentage of the grain crop will be sold to CONASUPO at the guaranteed price.

Domestic crop purchases by CONASUPO depend on supply/demand factors, price relationships, financial position, and storage capacity. Poor location and limited number of receiving points, long lines in waiting to deliver the crop to generally inefficient, unmechanized CONASUPO facilities, slow paying procedures, and high quality standards for grain purchases have all tended to reduce the amount of the grain crop that is sold to CONASUPO. Therefore, even though CONASUPO's guaranteed price may in fact be higher than the market price, CONASUPO may not be a viable outlet for many domestic grain producers. Furthermore, CONASUPO's domestic grain purchases seem to be biased toward basic food rather than feed grains.

Marketing of Imported Grains

Although Mexico's food and feed grain imports are dominated by corn, grain sorghum, and wheat, imports include lesser quantities of barley and oats. These grain imports have played an increasingly important role in domestic grain availability. Average annual imports of 1.5 MMT for corn, 717.3 TMT for grain sorghum, and 568.7 TMT for wheat during the 1975/79 period approximate respectively 14.2, 14.9, and 17.2 percent of total apparent consumption. Preliminary estimates suggest that imports of corn, grain sorghum, and wheat in 1980 comprised respectively 21.3, 30.4, and 21.9 percent of domestic consumption of these three grains.

As noted previously, the 1979 agreements between SECOM and private sector organizations allowed direct purchases of grain by Mexico's food/feed/livestock industries. Several mixed committees, including SECOM, CONASUPO, and private sector representatives, were organized in order to decide import quantities to be purchased directly by the private sector industries (Embassy 1981, p. 5). In accordance with these agreements, the mixed feed industry is represented by the Mexican Chamber of Manufacturing Industries (CANACINTRA) through its Balanced Animal Feed Manufacturer's Association and by the National Association of Animal Feed Manufacturers. Livestock producers are represented by the National Livestock Confederation (CNG) and poultry producers by the National Union of Poultrymen (UNA). Similar committees were organized with

representatives of major food industries (corn, wheat, and oilseed processors) who are also interested in importing grains and oilseeds. Furthermore, CONASUPO announced that it would supply small-to-medium sized grain users and public sector companies while slowing or stopping sales to large grain users.

CONASUPO Grain Sales

CONASUPO, as previously indicated, purchases a sizable proportion of domestic grain crops. However, since CONASUPO was for a long period the exclusive importer of grains, it supplied a substantial percentage of grains. Table 6 lists CONASUPO grain sales of corn, grain sorghum, wheat, and barley for the period 1965-79, as well as the percentage of total apparent grain consumption that these sales represent.

According to the data, CONASUPO accounted for an average of 26.3 percent of domestic corn sales (apparent consumption) in 1975/79, up from 10.6 percent in 1965/69. CONASUPO's corn sales averaged 2.8 MMT, more than triple the average 1965/69 level of 833.0 TMT. CONASUPO's wheat sales as a share of domestic consumption have been the highest of the four grains. However, this share decreased from an average 52.3 percent recorded for 1965/69 to 41.6 percent for 1975/79. In absolute values, CONASUPO's wheat sales increased from an average 949.1 TMT in 1965/69 to 1.3 MMT in 1975/79. CONASUPO's grain sorghum sales as a percentage of domestic consumption have shown the most marked increases, expanding from an average 4.9 percent in 1965/69 to 27.3 percent in 1975/79. In 1975/79, CONASUPO's grain sorghum sales averaged 1.3 MMT, up from 58.6 TMT for the 1965/69 period. CONASUPO's barley sales have been minimal, except during 1972-74, when they ranged from 6.2 percent to 16.4 percent of domestic consumption.

THE OILSEED COMPLEX

The market structure of Mexico's oilseed complex is similar to that of the feed grain complex. Figure 6 outlines the major marketing channels through which domestically produced and imported oilseed and oilseed products flow on their way to end users (in this case feed and/or livestock sectors). Unlike feed grains, oilseeds generally must undergo a transformation to meal before they are suitable for

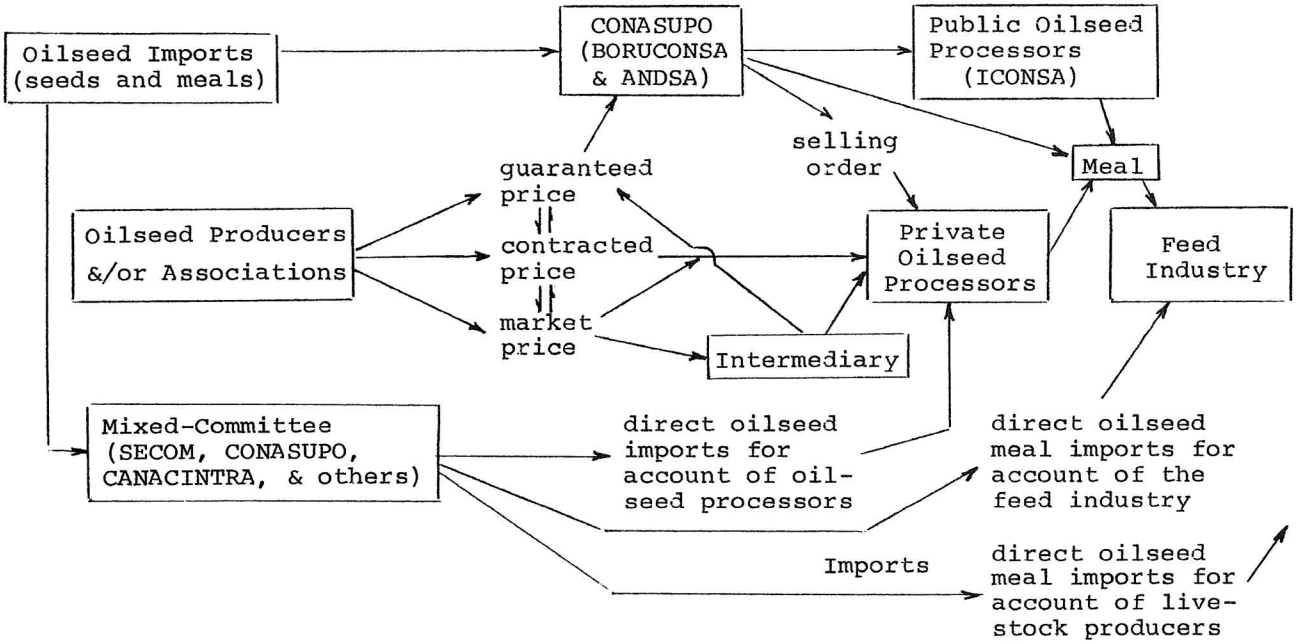
TABLE 6: CONASUPO's Domestic Sales of Corn, Grain Sorghum, Wheat, and Barley, Mexico, 1965-1979

Year(s)	Domestic Corn Sales (TMT)	Domestic Corn Sales Percentage of Apparent Consumption	Domestic Wheat Sales (TMT)	Domestic Wheat Sales Percentage of Apparent Consumption	Domestic Grain Sorghum Sales (TMT)	Domestic Grain Sorghum Sales Percentage of Apparent Consumption	Domestic Barley Sales (TMT)	Domestic Barley Sales Percentage of Apparent Consumption
1965	707.0	9.9	1,094.3	74.0	1.2	0.2		
1966	672.7	8.3	949.0	59.3	12.3	1.7		
1967	822.5	10.3	974.6	52.8	63.1	6.2		
1968	896.6	11.6	830.1	39.9	168.4	10.8		
1969	1,066.0	12.9	897.7	43.3	48.0	2.3		
1970	1,375.3	15.0	1,090.8	41.4	106.7	4.4		
1971	1,317.5	15.3	929.4	48.3	85.2	3.1		
1972	1,500.8	15.7	1,243.9	51.1	221.8	8.0	15.7	6.2
1973	1,797.4	17.4	1,538.0	55.0	25.3	1.0	54.5	15.4
1974	2,158.5	21.8	1,761.1	47.0	323.9	8.8	84.2	16.4
1975	2,635.2	25.1	988.7	34.8	804.2	18.6	2.5	0.6
1976	2,173.5	23.2	833.9	24.9	732.7	17.6	0.2	(0)
1977	2,786.0	27.9	1,586.6	55.0	925.9	19.5	4.2	0.9
1978	3,191.7	27.8	1,192.0	37.0	1,987.2	39.3	4.7	0.9
1979[a/]	3,166.6	27.1	1,929.7	45.7	2,030.1	37.2	0.2	(0)
Annual averages								
1965/69	833.0	10.6	949.1	52.3	58.6	4.9	0	0
1970/74	1,629.9	17.1	1,312.6	48.5	152.6	5.4	30.9	9.8
1975/79	2,790.6	26.3	1,306.2	39.5	1,296.0	27.3	2.4	0.5

Source: CONASUPO purchases from CONASUPO as quoted in SPP 1981, pp. 543-44; apparent consumption, table 12.

a/ Preliminary.

FIGURE 6: Major Marketing Channels for Domestically Produced and Imported Oilseeds and Oilseed Products, Mexico



Source: Compiled by authors.

use as a feed input. Therefore, the oilseed complex is slightly more complicated. The marketing of soybeans and, to a lesser extent, safflower and cottonseed has been stressed because of the importance of these major oilseeds and particularly because of their status as major ingredients in animal feeds.

Location of Production

Domestic production of Mexico's major oilseeds, especially soybeans, safflower, and cottonseed, is concentrated within the northwestern and northern areas of the country. For example, of domestic production of soybeans that averaged 429.8 TMT annually 1978-80, 76.7 percent was produced in the states of Sinaloa and Sonora. The other major soybean producing state was Tamaulipas which, during this same period, averaged 12.1 percent of domestic output. Combined, these three principal soybean states accounted for an average of 82.9 percent of total national 1978-80 soybean production (table 7). Safflower production was likewise concentrated in these same states. An average of 89.8 percent of domestic safflower during 1978-80 was produced in the states of Sinaloa, Sonora, and Tamaulipas (table 8). Major cottonseed producing states include Sonora, Baja California, and, to a lesser extent, Coahuila and Chihuahua. During the 1979-80 period, 75.6 percent of the average annual cottonseed production of 541.7 TMT was produced in these four major states (table 9).

Marketing of Domestically Produced Oilseeds and Products

Mexico's oilseed production is consumed domestically. Domestic production is generally purchased by CONASUPO, by an intermediary, or directly by oilseed processors themselves.

Direct purchase of the oilseed crop by an oilseed processor is probably the most common oilseed marketing channel. Oilseed processors generally contract directly with oilseed producers and/or producer associations for the purchase of crops. They may also purchase quantities of oilseeds from intermediaries or CONASUPO. Although oilseed processors may provide advance payment to cotton producers, contracts for other oilseeds do not provide an advance payment. Instead, oilseed producers and/or associations negotiate with oilseed processors for a prescribed quantity of oilseeds at a

TABLE 7: Principal Soybean Producing States, Mexico, 1978/80

State	1978 TMT	1978 Percentage of National Total	1979 TMT	1979 Percentage of National Total	1980 TMT	1980 Percentage of National Total
Sinaloa	126.7	38.9	366.0	52.2	151.5	48.3
Sonora	85.6	25.6	204.9	29.2	54.8	17.5
Tamaulipas	65.8	19.7	51.9	7.4	11.6	3.7
Total top 3	278.1	83.2	622.8	88.8	217.9	69.5
National total	334.0	100.0	701.6	100.0	313.5	100.0

Sources: 1978: SARH/DGEA, December 1980;
1979: SARH/DGEA, August, 1981;
1980: SARH/DGEA, June 1982.

Note: Preliminary figures are used for 1979, 1980.
Years are crop years. For example, the 1980 year equals 1979/80 crop year.

TABLE 8: Principal Safflower Producing States, Mexico, 1978/80

State	1978 TMT	1978 Percentage of National Total	1979 TMT	1979 Percentage of National Total	1980 TMT	1980 Percentage of National Total
Sinaloa	287.3	35.8	298.3	47.5	208.9	46.9
Sonora	220.6	46.7	199.5	31.8	105.8	23.7
Tamaulipas	63.1	10.3	49.0	7.8	84.2	18.9
Total top 3	571.0	92.8	546.8	87.0	398.5	89.5
National total	615.6	100.0	628.3	100.0	445.5	100.0

Sources: 1978: SARH/DGEA, December 1980;
1979: SARH/DGEA, August, 1981;
1980: SARH/DGEA, June 1982.

Note: Preliminary figures are used for 1979, 1980.
Years are crop years. For example, the 1980 year equals 1979/80 crop year.

TABLE 9: Principal Cottonseed Producing States, Mexico, 1978-1980

State	1979 TMT	1979 Percentage of National Total	1980 TMT	1980 Percentage of National Total
Sonora	169.5	31.1	165.6	30.8
B.C.N.	105.0	19.2	161.5	30.0
Coahuila	58.4	10.7	69.8	13.0
Chihuahua	44.8	8.2	44.4	8.3
Total top 4	377.7	69.2	441.3	82.1
National total	545.5	100.0	537.8	100.0

Sources: 1978: SARH/DGEA, December 1980;
1979: SARH/DGEA, August, 1981;
1980: SARH/DGEA, June 1982.

Note: Preliminary figures are used for 1979, 1980.
Years are crop years. For example, the 1980 year equals 1979/80 crop year.

certain price. In some cases, Banrural (Banco Nacional de Credito Rural) assists in the negotiation of contracts.

Intermediaries generally purchase oilseed crops from smaller, isolated producers (as is the case for grains). They may arrange harvest, transportation, and other services convenient to producers. Furthermore, they often pay cash. By providing these services, intermediaries are able to purchase oilseeds sometimes at a price lower than the guaranteed price levels (SAM 1980B). After collecting and grading the oilseeds, intermediaries in turn sell to oilseed processors and CONASUPO.

Intermediaries are less important in the marketing of domestic soybean, safflower, and cottonseed crops, which are generally produced by large-scale, commercialized producers; however, they do play an important role in the marketing of more traditionally produced oilseeds, such as sesame and coconut (SAM 1980B).

The other major oilseed buyer is CONASUPO, which has marketed a portion of the domestic oilseed crop since 1966. Along with supporting the guaranteed producer prices, CONASUPO's objectives are to regulate the market and to guarantee fair prices for intermediate and end users of oilseed products. Oilseeds purchased by CONASUPO are stored in BORUNCONSA or ANDSA warehouses for future sale to oilseed processors, for use in ICONSA oilseed processing plants, or in the case of export crops, for eventual export.

CONASUPO purchases mostly soybeans and safflower. Table 10 presents estimates of the quantity and percentage of the domestic soybean and safflower crops purchased by CONASUPO in 1966-79. These CONASUPO purchases vary widely, but soybean and safflower purchases reached peaks of 34.8 percent of production in 1968 and 81.2 percent in 1975, respectively.

The amount of the domestic oilseed crop marketed through intermediaries to CONASUPO or directly to private oilseed processors depends on domestic supply and demand factors.[3/] For example, if domestic oilseed production and/or supply is low, market prices for oilseeds may exceed the CONASUPO guaranteed price. In this case, oilseed producers generally can obtain higher prices by selling their crops to intermediaries or to oilseed processors. However, if domestic oilseed production and/or supply is high and market prices

TABLE 10: CONASUPO's Domestic Purchases of Soybeans and Safflower, Mexico, 1966-1979

Year	CONASUPO Domestic Soybean Purchases		CONASUPO Domestic Safflower Purchases	
	MT	Percentage of Total Domestic Production	MT	Percentage of Total Domestic Production
1966	230	0.2	113,093	47.9
1967	209	0.1	84,606	56.8
1968	95,768	34.8	0	0
1969	34,851	12.2	11	(0)
1970	0	0	0	0
1971	0	0	42,547	10.4
1972	53	(0)	99,379	36.6
1973	0	0	0	0
1974	80,966	16.5	0	0
1975	160,615	26.8	432,229	81.2
1976	291	0.1	4,016	1.7
1977	1,743	0.3	24	(0)
1978	506	0.2	0	0
1979[a/]	3,146	0.4	70,613	11.4
Average annual rates of growth				
1966/69	32,765	18.5[b/]	49,428	35.1[b/]
1970/74	16,204	3.1	28,385	9.6
1975/79[a/]	33,260	3.6	101,376	20.1

Source: CONASUPO purchases: SPP 1981.
Domestic production: table 25.

Note: (0) signifies less than 0.05 percent.

a/ Preliminary.
b/ Based on 1965-1969 average annual apparent consumption.

fall, an increasing percentage of the oilseed crop will be sold to CONASUPO at the guaranteed price.

Marketing of Imported Oilseeds and Products

Mexico's oilseed and oilseed meal imports consist primarily of soybeans, cottonseed, sunflower seed (recently), as well as soybean and cottonseed meal. These oilseed and oilseed meal imports play an important role in Mexico's oilseed complex. Imports of soybeans alone, for example, averaged 87.2 percent of annual domestic consumption during 1975/79.

Until 1979 CONASUPO was the exclusive domestic importer and exporter of oilseeds and oilseed meals. Agreements at that time, similar to those of the feed grain complex, provided for direct imports of oilseeds by the oilseed processing industry (Embassy 1981, p. 4). These agreements were made between the newly created Undersecretary for Regulation and Supply (Subsecretaria de Regulacion y Abasto) of the Secretary of Commerce (SECOM) and the oilseed processing industry. Under this agreement, mixed committees composed of SECOM, CONASUPO, and a representative from the oilseed processors (CANACINTRA) provided for the "formulation of import decisions and purchase in the name of and for the account of" oilseed processors (Embassy 1981, p. 5). CONASUPO, however, continued to serve as the import agent and to import oilseeds directly for small oilseed processors and for ICONSA, CONASUPO's oilseed processing plants (Embassy 1981, p. 5). In addition to these agreements by the oilseed processing industry, imports of oilseed and oilseed products by other major users (the mixed feed/livestock industry) were also arranged under the same type of system.

Oilseeds imported by CONASUPO combined with CONASUPO's domestic oilseed purchases are sold to oilseed processors and to CONASUPO's oilseed processing company, ICONSA. Imported oilseed meal, however, is sold directly to the feed industry and livestock producers.[4/]

Oilseed Processors

Private oilseed processors, as previously mentioned, purchase oilseeds on the domestic market via intermediaries, through direct contract, or through purchases from CONASUPO. Purchases from intermediaries and through direct contracts reflect the market price

established by supply and demand forces. However, market price has become more influenced by an increasing quantity of imports by CONASUPO which began in the last half of the 1970s. For instance, CONASUPO's oilseed sales accounted for over half of total apparent domestic soybean consumption during the 1975-79 period. Table 11 presents CONASUPO's domestic soybean and safflower sales and these sales as a percentage of total apparent domestic consumption from 1966 to 1979.

Oilseed processors purchase oilseeds from CONASUPO through selling orders. These orders, obtained in Mexico City, must exceed 30.0 MT and be paid for three to four months prior to delivery. The oilseeds purchased are then transported to the oilseed processor by CONASUPO. This procedure has been suggested to favor larger companies that can maintain contacts and relations in Mexico City and can afford cash outlays for future oilseed deliveries (SAM 1980B).

Mexican oilseed processing is an extremely concentrated industry dominated by relatively few companies. According to the 1975 industrial census, Mexico had a total of eighty-three oilseed processing plants. Of the eighty-three plants, the thirty-six largest processing plants accounted for approximately 63 percent of the total 1975 production value of the industry (Presidencia, p. 54).

Vertical integration between the oilseed processing industry and feed compounding industry exists. CONASUPO, for example, which has its own balanced feed plants (ALBAMEX), also processes oilseeds (ICONSA). Anderson Clayton & Co., one of the leading animal feed compounders, is also involved in oilseed processing.

TABLE 11: CONASUPO's Domestic Sales of Soybeans and Safflower, Mexico, 1966-1979

Year	CONASUPO Domestic Soybean Sales		CONASUPO Domestic Safflower Sales	
	MT	Percentage of Total Apparent Consumption	MT	Percentage of Total Apparent Consumption
1966	0	0	0	0
1967	0	0	66,547	45.6
1968	0	0	1,873	1.4
1969	7,000	2.4	0	0
1970	150	(0)	0	0
1971	1,280	0.4	3,500	0.9
1972	0	0	72,929	32.1
1973	17,145	4.1	4,382	1.4
1974	277,822	27.2	0	0
1975	261,100	50.9	42,250	9.4
1976	526,817	55.7	374,967	156.1[b/]
1977	271,923	32.9	9,275	1.8
1978	812,836	67.9	--	--
1979[a/]	489,581	53.7	--	--
Average annual rates of growth				
1966/69	1,750	1.3[c/]	17,105	12.2[c/]
1970/74	59,279	12.5	16,162	5.5
1975/79[a/]	472,451	53.7	144,497	33.7[d/]

Source: CONASUPO purchases: SPP 1981.
Apparent consumption: table 24.

Note: (0) signifies less than 0.5 percent.

a/ Preliminary.
b/ This percentage could be due to changes in stocks that were not included in the total apparent consumption figures.
c/ Based on 1965-69 average annual apparent consumption (see table 24).
d/ Based on 1975-77 apparent consujption and CONASUPO sales.

THE FEED GRAIN COMPLEX

Food/Feed Grain Consumption

Mexico's grain consumption has historically been dominated by corn. In the first half of the 1960s, 74.2 percent of Mexico's total recorded grain consumption consisted of corn. The remaining 25.9 percent of total grain consumption included wheat, grain sorghum, barley, and oats.

Apparent consumption of major food and feed grains more than doubled from an annual 8.5 MMT recorded for 1961/64 to 19.1 MMT for 1975/79. This growth in food and feed grain consumption corresponds to an annual growth rate of 5.6 percent. Table 12 presents Mexico's apparent food and feed grain consumption by type of grain and aggregate grain consumption totals for the period 1961/64 to 1980.

Consumption levels for all the major food and feed grains, except oats, increased significantly over the last two decades. However, of all these grains, the most dramatic increase in consumption was grain sorghum, which increased 19.4 percent annually from 1961/64 to 1975/79. During the 1975/79 period, grain sorghum consumption constituted 24.9 percent of Mexico's total grain consumption, up from 4.3 percent in 1961/64. Corn, although still the principal grain consumed, dropped in its relative share of total grain consumption from 74.1 percent recorded for 1961/64 to 61.0 percent during 1975/79. During the 1961/64-1975/79 period, annual growth in consumption for corn was 3.7 percent, for wheat 4.9 percent, and for barley 6.1 percent.

In 1980, Mexico's total apparent grain consumption was recorded preliminarily at 22.1 MMT, up slightly from the 21.2 MMT recorded for 1979.[5/] From this apparent consumption of 22.1 MMT, over 12.1 MMT was accounted for by corn, 5.8 MMT by grain sorghum, 3.6 MMT by wheat, 550.0 TMT by barley, and 59.0 TMT by oats.

Feed Grain Utilization

In the last twenty years, an increased proportion of Mexican grain consumption has been utilized in livestock and poultry production. For example, of an average grain consumption of 8.5 MMT annually 1961/64, only 16.5 percent was consumed as feed. By 1975/79, of

TABLE 12: Apparent Food/Feed Grain Consumption and Annual Rates of Growth by Type of Grain, Mexico, 1961/64-1980 (thousand metric tons)

Year(s)[a/]	Grain Sorghum	Corn	Wheat	Grain Barley	Oats	Total Grains
1961/64	361.6	6,290.2	1,564.0	202.4	75.8	8,494.0
1965/69	1,195.9	7,844.8	1,815.3	233.7	58.2	11,147.8
1970/74	2,845.5	9,516.7	2,707.0	316.4	46.1	15,431.6
1975/79	4,751.3	10,602.9	3,303.5	478.5	75.9	19,212.3
1975	4,334.2	10,502.3	2,841.7	404.2	59.4	18,141.8
1976	4,170.1	9,358.3	3,347.6	441.8	88.4	17,406.2
1977	4,741.4	10,001.5	2,886.7	496.1	48.0	18,173.7
1978	5,053.0	11,479.2	3,221.7	500.8	122.5	29,377.1
1979	5,458.0	11,673.1	4,222.0	550.3	61.5	21,962.9
1980[b/]	5,805.0	12,101.0	3,563.0	550.0	59.0	22,078.0
Average annual rates of growth (percent)						
1961/64-1965/69	30.4	5.0	4.5	3.2	-5.3	6.2
1965/69-1970/74	18.9	3.9	8.3	6.2	-4.5	6.7
1970/74-1975/79	10.8	2.2	4.1	8.6	10.5	4.5
1961/64-1975/79	19.4	3.7	5.6	6.1	0	5.8

Source: Tables 15 and 17.

Note: Production plus net imports (no stocks).

a/ Composite years (see appendix).
b/ Preliminary.

total grain consumption of 19.0 MMT, 33.7 percent was utilized for feed. Table 13 compares total feed grain consumption against total grain consumption for the period 1961/64 - 1980.

Grain sorghum, corn, wheat, barley, and oats made up the entire quantity of utilized feed grains. However, the percentage of these five grains utilized for feed varied greatly. Of total 1961/64 feed grain consumption, grain sorghum accounted for 25 percent and corn for 67 percent. By 1975/79, grain sorghum had increased to 70 percent while corn had decreased to 23 percent of feed grain consumption. Table 14 presents the percentages of grain sorghum, corn, wheat, barley, and oat consumption estimated by the USDA/FAS (except for corn) to be utilized for feed.[6/]

The dramatic increase in the relative importance of feed grain consumption was due principally to substantial increases in Mexico's grain sorghum consumption and not from major shifts of grains from food to feed usage. According to table 14, Mexico's feed grain utilization has been increasingly dominated by grain sorghum since the 1960s. Nearly the entire amount of total grain sorghum consumption was utilized for feed. For example, in 1961/64 an estimated 98.6 percent of Mexican annual grain sorghum consumption of 361.6 MMT was feed. Furthermore, grain sorghum accounted for over 25 percent of total feed grain utilization. In 1975/79, 98.3 percent of total annual grain sorghum consumption was feed, and grain sorghum accounted for 72.2 percent of total feed grain consumption.

Corn, superior in nutrient content, is typically a major ingredient in animal feed in many countries. In Mexico, however, human consumption of corn--principally in the form of tortillas, a staple in the Mexican diet--dominates utilization. In fact, cultural, economic, and political barriers restrict the use of corn as an animal feed.[7/] In 1961/64, approximately 15 percent was utilized for feed. In the period 1975/79, again approximately 15 percent of total annual corn consumption was utilized for feed. However, corn was estimated to be the second most important feed grain during 1975/79, accounting for 24 percent of total feed grain consumption. Only starting in 1980 was any significant amount of feed corn imported when a substantial quantity of imported number three yellow corn was utilized as a substitute for grain sorghum.

TABLE 13: Apparent Feed Grain Utilization and Annual Rates of Growth by Type of Grain, Mexico, 1961/64-1980 (thousand metric tons)

Years	Grain Sorghum Feed	Corn Feed	Wheat Feed	Barley Feed	Oat Feed	Total Feed Grain Consumption	Total Grain Consumption	Total Feed Grain Consumption as Percentage of Total Grain Consumption
1961/64	356.6	943.9	39.1	29.8	35.9	1,404.9	8,494.9	16.5
1965/69	1,185.1	1,176.7	72.6	33.6	26.1	2,494.2	11,147.8	22.4
1970/74	2,785.7	1,427.5	140.8	91.1	28.1	4,473.2	15,431.6	29.0
1975/79	4,670.6	1,590.4	168.5	156.5	45.0	6,630.0	19,212.3	34.5
1975	4,264.9	1,575.3	113.7	141.1	34.2	6,130.2	18,141.8	33.8
1976	4,074.1	1,403.8	210.9	149.8	53.0	5,891.6	17,406.2	33.8
1977	4,679.7	1,500.2	95.3	163.7	26.1	6,465.0	18,173.7	35.6
1978	4,967.1	1,721.9	238.4	176.3	82.1	7,185.7	20,377.1	35.3
1979	5,354.3	1,751.0	185.8	134.8	37.0	7,462.9	21,962.9	34.0
1980[b/]	5,694.7	1,815.2	103.3	152.9	31.5	7,797.5	22,078.0	35.3
Average annual rates of growth (percent)								
1961/64-1965/69	27.2	4.5	13.2	2.5	-6.2	12.2	6.2	
1965/69-1970/74	18.6	3.9	14.2	22.0	1.5	12.4	6.7	
1970/74-1975/79	10.9	2.2	3.7	11.4	9.9	8.2	4.5	
1961/64-1975/79	18.7	3.5	10.2	11.7	1.5	10.9	5.8	

S urce: Tables 12 and 14.

a/ Preliminary.

TABLE 14: Feed Utilization of Grains as a Percentage of Total Domestic Consumption, Mexico, 1961/64-1981 (percentage)

Year(s)[a/]	Grain Sorghum	Corn[b/]	Wheat	Barley	Oats
1961/64	98.6	15.0	2.5	14.7	47.4
1965/69	99.1	15.0	4.0	14.4	44.8
1970/74	97.9	15.0	5.2	28.8	60.9
1975/79	98.3	15.0	5.1	32.7	59.2
1975	98.4	15.0	4.0	34.9	59.3
1976	97.7	15.0	6.3	33.9	60.0
1977	98.7	15.0	3.3	33.0	54.4
1978	98.3	15.0	7.4	35.2	67.0
1979	98.1	15.0	4.4	24.5	60.2
1980	98.1	15.0	2.9	27.8	53.3
1981[c/]	98.1	15.0	1.4	25.0	63.2

Source: USDA/FAS, Foreign Agricultural Circular: Grains, various issues.

a/ USDA crop year.
b/ Estimated by authors, see footnote 6/ and 7/.
c/ Preliminary figures.

Wheat, although not typically a feed grain, is used to a limited extent for feed principally in the northwestern wheat growing areas.[8/] In the 1961/64 period, an average of approximately 2.5 percent of total annual wheat consumption was utilized for feed. In 1975/79, an average of 5.1 percent of total wheat consumption was feed. During this period, wheat accounted for approximately 2.5 percent of total feed grain utilization.

Barley is used to a limited extent in Mexico as a feed grain. Of total annual domestic barley consumption in 1961/64, an estimated 14.7 percent was used for feed. By 1975/79, this feed utilization percentage had increased to 32.7 percent.

Food/Feed Grain Production

Mexican food/feed grain production is most markedly characterized by variability. Over the 1960/64-1975/79 period, Mexico's total grain production almost doubled, increasing from 8.8 MMT to 16.6 MMT.

Dramatic changes have occurred in amounts of grain by type produced. For example, in 1960/64, corn accounted for approximately 75 percent of Mexico's total grain output of 8.8 MMT. Wheat accounted for approximately 18 percent, grain sorghum for 3.9 percent, barley for 1.9 percent, and oats for 0.8 percent. By 1975/79, of domestic grain produced averaging 16.6 MMT, corn accounted for only 55.8 percent. Grain sorghum had increased to a share of 24.6 percent, and barley to 2.8 percent of total grain output. The production of wheat and oats decreased slightly to 16.5 and 0.4 percent, respectively, of grain output.

The production of grain in recent years has likewise tended toward variability. According to the SARH, production of total grains in 1979 was 15.2 MMT, down 18 percent from the 18.5 MMT for 1978. However, preliminary estimates show grain production up substantially in both 1980 and 1981. The 1980 grain crop of 20.8 MMT was up a remarkable 36.8 percent over 1979 production levels. Similarly, the 1981 domestic grain crop of 24.8 MMT was up 19.2 percent over 1980 levels (table 15). Although only limited information is available on the 1982 grain crop, production of summer grown corn and grain sorghum was impaired due to severe and widespread drought.

TABLE 15: Food/Feed Grain Production and Annual Rates of Growth by Type of Grain, Mexico, 1961/64-1980 (metric tons)

Year(s)[a/]	Grain Sorghum	Corn	Wheat	Barley	Oats	Total Grains
1961/64	344.7	6,665.5	1,590.6	172.4	73.8	8,847.0
1965/69	1,682.6	8,856.8	2,065.4	216.4	40.6	12,861.7
1970/74	2,928.8	8,869.0	2,239.2	292.1	37.2	14,366.3
1975/79	4,075.7	9,257.2	2,735.0	456.7	73.8	16,599.4
1975	4,125.8	8,448.7	2,798.2	440.3	87.5	15,900.5
1976	4,026.9	8,017.3	3,363.3	549.2	47.6	16,004.2
1977	4,325.0	10,137.9	2,455.8	417.8	122.4	17,458.9
1978	4,193.0	10,930.1	2,784.7	505.3	61.4	18,474.4
1979	3,708.0	8,752.0	2,273.0	376.0	49.9	15,158.9
1980[b/]	4,812.0	12,383.0	2,784.0	610.0	181.9	20,770.9
1981[b/]	6,295.7	14,763.8	3,189.4	559.2		24,810.0
Average annual rates of growth (percent)						
1961/64-1965/69	37.3	5.8	5.4	4.7	-11.3	7.8
1965/69-1970/74	11.7	0	1.6	6.2	-1.3	2.2
1970/74-1975/79	6.8	0.9	4.1	9.4	14.7	2.9
1961/64-1975/79	17.9	2.2	3.7	6.7	0	4.3

Source: Compiled by authors from:

1960-77: SARH/DGEA Nov. 1981; 1978-80: Lopez Portillo Augg. 1981C; 1981: SARH/DGEA Jan. 1982.

a/ Years refer to crop years. For example, the 1980 year in the table is actually the 1979/80 crop year.
b/ Preliminary.

Grain Trade

Throughout most of the 1960s, Mexico remained self-sufficient and maintained a strong positive trade balance in grain. In the period 1960/64, for example, Mexico's net grain exports averaged 38.3 TMT annually, increasing to 1.3 MMT annually in 1965/69. Mexico's grain trade in the 1960s was dominated by exports of wheat and corn and to a lesser extent grain sorghum. In 1960/64, Mexico exported a net annual average of 100.6 TMT of wheat and 28.4 TMT of corn. In 1965/69, annual net exports of corn increased dramatically to 1.0 MMT and wheat to 250.1 MMT.

However, throughout the late 1960s and the 1970s, Mexico's domestic grain production continually lagged behind a more rapidly expanding demand. As a result, increasing quantities of grains such as corn, grain sorghum, and wheat, among others, were imported in the 1970s. During the 1970/74 period, net annual grain imports averaged 1.2 MMT. Net annual corn imports averaged 534.1 TMT, wheat 467.8 TMT, and grain sorghum 125.4 TMT. By 1975/79, grain imports had more than doubled to an annual 2.7 MMT, totaling approximately 14.2 percent of apparent domestic consumption. Specifically, corn imports had increased to an average of 1.5 MMT annually, grain sorghum to 717.3 TMT, and wheat to 408.7 TMT.

Mexico's grain imports reached record levels in 1980, despite a strong recovery in domestic grain production. Although these record imports resulted in part from a disastrous 1979 grain crop, they also reflect a continuation of the combined trends of stagnation in aggregate domestic grain production and rapidly increasing consumption levels.

Estimates place Mexico's net grain imports at 29 percent of total apparent 1980 grain consumption (table 16). Grain import data for 1980 show that 2.1 MMT of grain sorghum, 779.0 TMT of wheat, 174.0 TMT of barley, and 9.0 TMT of oats accounted for Mexico's net grain imports of 6.4 MMT (table 17). These massive grain imports continued into 1981, although at slightly lower levels. Data indicate substantial declines in many agricultural imports, including grains, in 1982.

Although Mexican grain imports declined marginally in 1981 and substantially in 1982, Mexican grain stocks also fluctuated greatly over the period. Undoubtedly, grain stocks were seriously depleted

TABLE 16: Grain Consumption, Imports (Exports), and Self-Sufficiency Percentage, Mexico, 1961/64-1980 (thousand metric tons)

Year(s)[a/]	Total Apparent Grain Consumption	Total Net Grain Imports (Exports)	Self-Sufficiency Percentage[b/]
1961/64	8,494.0	(38.3)	100.4
1965/69	11,147.8	(1,338.2)	113.6
1970/74	15,431.6	1,172.4	92.4
1975/79	19,212.3	2,860.5	85.1
1975	18,141.8	3,694.9	79.6
1976	17,406.2	940.6	94.6
1977	18,173.7	3,077.0	83.1
1978	20,377.1	2,590.1	87.3
1980[c/]	22,078.0	6,398.1	71.0

Source: Tables 12 and 17.

a/ Composite Year (see appendix).
b/ Self-Sufficiency Percentage equals Total Domestic Grain Production as a Percent of Total Apparent Grain Consumption.
c/ Preliminary.

TABLE 17: Net Food/Feed Grain Imports (Exports) by Type of Grain, Mexico, 1961/64-1980 (thousand metric tons)

Year(s)[a/]	Grain Sorghum	Corn	Wheat	Barley	Oats	Total Net Imports
1961/64	51.6	(28.4)	(100.6)	35.0	4.1	(38.3)
1965/69	(100.6)	(1,020.6)	(250.1)	25.7	7.5	(1,338.2)
1970/74	125.4	534.1	467.8	31.8	13.3	1,172.4
1975/79	717.3	1,526.5	568.7	46.1	1.9	2,860.5
1975	834.8	2,654.5	43.5	153.8	8.2	3,694.9
1976	44.2	909.6	(15.7)	1.6	0.9	940.6
1977	714.5	1,984.2	430.9	(53.1)	0.4	3,007.0
1978	728.0	1,341.0	438.0	83.0	0.1	2,590.1
1979	1,265.0	743.3	1,947.0	45.0	0.1	4,000.1
1980[b/]	2,097.0	3,349.9	779.0	174.0	9.0	6,408.1

Source: Compiled by authors from:

1960-1975: SARH/DGEA Nov. 1981
1975-1980: SARH/DGEA Feb. 1981; Portillo, 1981C; FAO, FAO Trade Yearbook, various issues.

a/ Calendar years.
b/ Preliminary.

during 1979-80, and therefore a proportion of the massive imports of 1980 was likely to have replenished domestic stocks. In addition, a softening in grain imports was expected with a stated government policy of self-sufficiency in corn in 1982 (an election year in Mexico) and the programmed government strategic grain reserve. Hence, a drastic potential decline in 1982 grain imports was quite possibly a one year phenomenon, reflecting a change in stocks (albeit with increased production) and not necessarily reflecting a success at self-sufficiency. In fact, severe crop losses and developing grain shortages were widely reported in Mexico in early to mid-1982.

The ability to continue imports may be curtailed by the economic and financial crisis that developed in 1982. However, the Commodity Credit Corporation line of credit and loans from the International Monetary Fund, among others, could partially alleviate these constraints in the short run.

Mexico's major source of agricultural imports historically has been the United States. The source of Mexico's grain imports is no exception. Tables 18, 19, and 20, which show the sources of Mexico's corn, grain sorghum, and barley imports during the 1970-78 period, suggest that the only major U.S. competitor for these three agricultural commodities was Argentina.

In 1980, according to the USDA/FAS, Mexico became the third largest importer of U.S. agricultural products (Embassy 1981, p. 40). For example, USDA/FAS recorded U.S. grain exports (grain sorghum, corn, barley, oats, wheat, and wheat flour) at US$1,159 million in 1980, up from the US$474 million recorded in 1979 and the US$296 million annual average for the 1974-78 period. The largest proportion of Mexico's imports from the United States in 1980 was accounted for by corn at US$677.6 million and by grain sorghum at US$318.6 million (table 21).

According to the USDA/FAS, U.S. grain exports to Mexico declined slightly to US$1,009.7 million in 1981. Of the five major U.S. grains exported to Mexico in 1981, only wheat/wheat flour quantities (volume and value) increased over 1980 levels. From 1980 to 1981, U.S. grain sorghum exports to Mexico declined in volume (2.4 MMT to 2.0 MMT), but increased slightly in value (US$318.6 to US$329.7 million). Exports of corn, barley, and oats were down substantially from 1980 levels in 1981.

TABLE 18: Corn Imports by Country of Origin, Mexico, 1970-1978 (percentage)

Year	Argentina	Canada	United States	Others	Total	Total Volume (TMT)
1970	0	0	64.9	35.1[a/]	100.0	760.9
1971	0	0	100.0	0	100.0	17.3
1972	0	0.2	99.8	0	100.0	197.5
1973	0	0.3	68.5	31.2[a/]	100.0	1,136.1
1974	1.1	0.1	98.8	0	100.0	1,270.4
1975	32.4	0.1	56.3	11.2[a/]	100.0	2,618.0
1976	12.1	0.1	65.9	21.9[a/]	100.0	905.4
1977	4.1	0.2	95.7	0	100.0	1,751.1
1978[b/]	1.5	0	97.3	1.2	100.0	1,412.4

Source: SARH/DGEA June 1980.

a/ Included imports from:
1970: Switzerland (34.4%)
1973: South Africa (13.0%), Switzerland (9.6%), U.K. (3.6%), Central African Republic (1.5%), Kenya (1.2%), China (1.2%), and Italy (1.1%).
1975: Mozambique (5.6%), Switzerland (2.5%), Germany, Fed. Rep. (1.8%), and Kenya (1.2%).
1976: Mozambique (6.9%), Switzerland (6.5%), Kenya (6.2%), and South Africa (1.7%).

b/ Preliminary.

TABLE 19: Grain Sorghum Imports by Country of Origin, Mexico, 1970-1978 (percentage)

Year	Argentina	Canada	United States	Others	Total
1970	0	0.3	99.7	0	100.0
1975	41.0	0.6	58.3	0.1	100.0
1976	26.7	0.0	73.3	0	100.0
1977	11.2	0.3	85.9	2.6	100.0
1978[a/]	27.6	0	65.7	6.7	100.0

Source: SPP 1980A.

a/ Preliminary.

TABLE 20: Barley Imports by Country of Origin, Mexico, 1970-1978 (percentage)

Year	U.S. Volume	U.S. Percentage of Total	Canada Volume	Canada Percentage of Total	Total Volume	Total Percentage
1970	1,350.0	100.0	0	0	3,350.0	100.0
1971	1,617.0	100.0	0	0	1,617.0	100.0
1972	2,772.0	100.0	0	0	2,772.0	100.0
1973	55,328.0	98.9	618.0	1.1	55,946.0	100.0
1974	122,797.0	100.0	0	0	122,797.0	100.0
1975	152,918.0	98.9	240.0	0.2	153,158.0	100.0
1976	2,289.0	100.0	0	0	2,289.0	100.0
1977	129.0	100.0	0	0	129.0	100.0
1978[a/]	82,260.0	99.6	369.0	0.4	82,629.0	100.0

Source: SARH/DGEA April 1980.

a/ Preliminary.

TABLE 21: Volume and Value of U.S.-Sourced Mexican Imports of Grain Sorghum, Corn, Barley, and Oats, and Wheat and Wheat Flour, 1974-1981

Year[a/]	Grain Sorghum		Corn		Barley & Oats		Wheat & Wheat Flour		Total	
	Volume	Value	Volume	Value	Volume	Value	Volume	Value	Volume	Value
1974	451	55.3	1,386	194.2	186	26.9	1,015	181.6	3,038	458.0
1975	507	62.5	1,408	208.8	195	38.1	67	13.0	2,177	322.4
1976	10	1.1	68.5	82.6	5	0.7	2	0.3	702	84.7
1977	669	66.8	1,715	176.3	1	(0)	454	41.4	2,839	284.5
1978	665	69.5	1,415	159.9	97	14.4	665	88.8	2,842	332.6
1979	1,344	154.0	865	114.2	53	9.0	1,179	197.2	3,441	474.4
1980	2,403	318.6	4,851	677.9	208	39.0	675	123.5	8,137	1,159.0
1981	2,087	329.7	2,825	450.7	117	21.7	1,054	207.6	6,083	1,009.7
October-June										
1980/81	2,338	348.3	3,537	563.2	43	6.0	930	188.2	6,848	1,105.7
1981/82	234	32.0	537	73.9	92	18.4	553	98.0	1,416	222.3

Source: CY1974-CY1981: Embassy, 1981, 1982.
October-June, 1980/81 and 1981/82: USDA/ERS, FATUS, Foreign Trade of the United States, July/August 1982.

Note: Volume in TMT, Value in Million U.S. Dollars.
(0) signifies less than $50,000.

a/ Calendar year.

As of mid-1982, U.S. exports of food/feed grains to Mexico were continuing the decline recorded in 1981. Over the October 1981 through June 1982 period, aggregate Mexican imports of U.S. grain sorghum, corn, barley, and oats, and wheat/wheat flour were recorded at US$222.3 million, down considerably from the US$1,105.7 million in aggregate imports during October 1980 through June 1981.

Although the rapid decline in Mexican grain imports from the United States is due partly to increases in Mexico's domestic grain production, it is also caused by a decrease in the U.S. share of the Mexican grain import market. In 1980, the USDA/FAS reported that the only non-U.S. Mexican grain imports were 97.6 TMT of Canadian wheat and 73.0 TMT of Asian and South American rice (Embassy, 1982, p. 27). However, in 1981, Mexican imports of grain from countries other than the United States reportedly increased to 947.0 TMT. Included in these 1981 imports were 979.0 TMT of Argentine grain sorghum, 88.0 TMT of Canadian wheat, and 62.0 TMT of rice from China and Costa Rica (Embassy 1982, p. 27).

As noted previously, with record imports in 1979 and with the prospect of even larger grain imports in 1980, Mexico entered into supply/purchase agreements with the United States. The agreement for 1980 negotiated the purchase of various agricultural commodities, including 7.3 MMT of grains.[9/] A similar supply/purchase agreement with the United States for 1981 provided for imports of between 4.7 and 6.2 MMT of U.S. grains. In June 1981, a third supply/purchase agreement (for 1982) signed between the United States and Mexico provided for total grain imports of 4.2 MMT, including 2.2 MMT of grain sorghum or #3 yellow corn, 1.5 MMT of #2 corn, 0.5 MMT of wheat, and 50.0 TMT of rice (USDA/FAS 1981A, p. 34) (table 22).

In 1981, similar supply/purchase agreements were signed between Mexico and Argentina, and Mexico and Canada. The agreements allowed Mexico to purchase agricultural commodities through grain boards on a government-to-government basis. This purchasing mechanism is reportedly the preference of the Mexican government and an option not offered by the United States (Embassy 1982, p. 27). These Argentine and Canadian supply/purchase agreements, combined with the Mexican government's policy of diversifying its foreign supply sources, paved the way for a sizable decline in the U.S. share of the Mexican grain market (Embassy 1981, p. 27).

TABLE 22: Quantities of Agricultural Commodities Provided for in 1982 United States-Mexico Supply/Purchase Agreement (thousand metric tons)

Commodity	Quantity
Grain sorghum (or No. 3 corn)	2,200
Corn, No. 2[a/]	1,500
Wheat	500
Rice	50
Oilseeds	200
Others	120
TOTAL	4,570

Source: USDA/FAS, July 1981.

a/ Of the 1,500 TMT total, 500 TMT may be white corn.

Grain Prices

At the producer level, prices of major grains since 1960 have lagged behind domestic price levels (measured by the GDP deflator). Over the 1960-80 period, the annual rate of growth for the GDP was 10.6 percent. At the same time, average rural prices of grains increased at substantially lower rates. The average rural price for corn increased at an annual rate of 9.9 percent, grain sorghum at 8.9 percent, wheat at 7.3 percent, barley at 8.7 percent, and oats at 6.9 percent. Table 23 lists the annual rates of growth of average rural prices and CONASUPO guaranteed price levels for corn, grain sorghum, wheat, barley, and oats.

Stimulation of agricultural production and reduction of imports have become increasingly important factors of Mexican agricultural policy. Also, guaranteed prices for most grain and oilseed crops have been a major interest of this policy. In the case of grains, CONASUPO has guaranteed prices for corn and wheat since 1960, for grain sorghum since 1961, and for barley since 1971. A guaranteed price for oats has not been established.

After more than twelve years of little or no change in guaranteed price levels, the government began in 1971/1973 to raise these price levels. These increases continued throughout the 1970s and into the 1980s.

Increases in CONASUPO guaranteed grain prices (marketing year prices) since 1972/1973 have been substantial. For example, over the 1970-75 period, guaranteed price levels, although remaining unchanged during the first of the period, were increased 15.1, 17.8, and 16.9 percent annually for corn, grain sorghum, and wheat, respectively. These increases exceeded domestic inflation (measured by the GDP deflator) averaging 12.4 percent. In the 1975-80 period, CONASUPO guaranteed price levels were increased 18.6, 15.4, and 15.2 percent annually for corn, grain sorghum, and wheat, respectively, slower than economy-wide price increases averaging 24.5 percent annually.

In 1980, CONASUPO set guaranteed grain prices for the 1980/81 marketing year at 4,450 pesos/MT (US$193.90) for corn, 2,900 pesos/MT (US$126.36) for grain sorghum, and 3,550 pesos/MT (US$154.68) for wheat. In 1981, guaranteed prices were increased 47.2, 35.5, and 29.6 percent and, in 1982, 35.0, 32.2, and 50.7 percent, respectively, for corn, grain sorghum, and wheat. By 1982,

TABLE 23: Rates of Growth of CONASUPO Guaranteed and Average Rural Producer Prices, Mexico, 1960-1980 (average annual percentage)

Period	GDP Deflator	Corn		Grain Sorghum		Wheat		Barley		Oats
		CONASUPO	Average Rural	CONASUPO	Average Rural	CONASUPO	Average Rural	CONASUPO	Average Rural	Average Rural
1960-65	3.5	3.2	5.6	3.5[a/]	-0.1	0	1.7	--	2.1	0.4
1965-70	3.5	0	1.2	0	0.4	-2.4	-2.3	--	1.1	-1.0
1970-75	12.4	15.1	15.5	17.8	19.5	16.9	15.4	11.1[b/]	13.5	14.9
1975-80	24.1	18.6	20.8	15.4	17.2	15.2	15.6	--	19.1	14.1
1960-80	10.6	9.0	9.9	8.9	8.9	7.0	7.3	--	8.7	6.9

Source: GDP deflator: Bank of Mexico as quoted in NAFINSA.
CONASUPO price: CONASUPO 1978, 1981.
Average rural price: SARH/DGEA, November 1981.

Note: CONASUPO prices are marketing year and rural prices are calendar year.

a/ For 1961-65 period.
b/ For 1971-75 period.

CONASUPO's guaranteed price for the 1982/83 marketing year had increased to 8,850 pesos/MT for corn, 5,200 pesos/MT for grain sorghum, and 6,930 pesos/MT for wheat.

CONASUPO increased guaranteed producer crop prices in real terms under the guidelines of the 1980 SAM program. Although CONASUPO had already insured increased guaranteed prices for 1982/83, there was considerable doubt that Mexico would be able to continue rapid guaranteed price increases and associated subsidies due to general economic crisis (BANAMEX June 1982, p. 257). During such a crisis, slowing in the nominal increases of guaranteed CONASUPO prices can be expected.

THE OILSEED COMPLEX

Oilseed Consumption and Production

As recently as the early 1960s, Mexico's oilseed complex was almost completely dominated by cottonseed, copra, and sesame. In the 1961/64 period, for example, of a total apparent oilseed consumption that averaged 1.3 MMT annually, 90.4 percent was comprised of these three oilseeds. The remaining 9.6 percent of apparent oilseed consumption included relatively small quantities of safflower, soybeans, linseed, and palm kernel (table 24).[10/]

However, during the 1960s and 1970s, profound changes occurred within the Mexican oilseed complex. Consumption of high oil yielding cottonseed, coconut, and sesame dropped from an annual average of 1.2 MMT in 1961/64 to 944.8 TMT in 1975/79. On the other hand, consumption of high meal yielding oilseeds, such as soybeans and safflower, which accounted for 81.4 TMT (6.4 percent) of total oilseed consumption in 1961/64, soared to 1.4 MMT (59.8 percent) during 1975/79.

Total oilseed consumption averaged 2.3 MMT during the 1975/79 period, up an annual average 4.2 percent over the 1.3 MMT during 1961/64. Over this same 1961/64-1975/79 period, average annual changes in apparent consumption for major oilseeds ranged from dramatic increases for soybeans (24.7 percent) and safflower (18 percent) to declines for sesame (3.6 percent), cottonseed (2.3 percent), and copra consumption (1.1 percent).

According to estimates for 1980 Mexico's total oilseed production was 1.7 MMT, down substantially from the 2.2 MMT for 1979.

TABLE 24: Apparent Oilseed Consumption and Annual Rates of Growth by Type of Oilseed, Mexico, 1961/64 - 1980 (thousand metric tons)

Year(s)[a/]	Soybean	Safflower	Cottonseed	Copra	Sesame	Linseed	Sunflower	Palm Kernal	Total Oilseed
1961/64	35.8	45.6	823.0	179.4	144.2	14.8		25.0	1,267.9
1965/69	132.0	140.7	905.6	186.7	155.5	15.1		25.2	1,560.8
1970/74	475.5	296.2	634.0	145.5	163.5	23.7	15.4[b/]	14.3	1,762.0
1975/79	879.3	504.0	584.8	153.4	84.6	15.4	80.8	12.3	2,314.6
1975	513.1	526.5	826.8	141.5	147.9	6.8	3.7	13.7	2,180.0
1976	946.6	240.3	428.4	147.0	90.4	27.3	2.0	10.4	1,892.4
1977	827.6	518.4	389.2	160.0	71.2	13.3	1.9	14.9	1,996.5
1978	1,197.6	616.0	703.4	158.8	85.8	20.0	229.0	13.9	3,024.4
1979	911.8	619.0	575.9	159.9	27.7	9.4	167.6	8.4	2,479.7
1980[c/]	1,615.0	446.0	694.0	130.1	120.7	23.0	302.8	12.3	3,339.1
Average annual rates of growth (percent)									
1961/64-1965/69	33.6	28.5	2.1	0.9	1.7	0.5		0.2	4.7
1965/69-1970/74	29.2	16.1	-6.9	-4.9	1.0	9.5		-10.3	2.5
1970/74-1975/79	13.1	11.2	-1.6	1.1	-12.3	-8.3	44.5	-3.1	5.6
1961/64-1975/79	24.7	18.0	-2.3	-1.1	-3.6	0.3		-4.8	4.2

Source: Tables 25 and 32.

a/ Composite year, see appendix.
b/ For 1971-74 period.
c/ Preliminary.

Nearly 80 percent of production was accounted for by cottonseed (538.0 TMT), safflower (446.0 TMT), and soybeans (312.0 TMT). The remaining 22.1 percent of domestic production included sesame (176.0 TMT), copra (168.0 TMT), sunflower (19.5 TMT), palm kernel (8.4 TMT), and linseed (6.4 TMT) (table 25).

Trends in oilseed production also point to the growing importance of soybeans and safflower. Over the 1961/64-1975/79 period, soybean and safflower production increased from a combined total of 6.3 percent of average domestic oilseed production in 1961/64 to 55.7 percent in 1975/79. All other oilseeds, with the exception of linseed, registered absolute production declines over the 1961/64-1975/79 period.

Oilseed Meal Consumption and Production

Mexican oilseed meal consumption has increased dramatically at an annual growth rate greater than 7.6 percent over the past two decades. From 1961/65 to 1975/79, the apparent consumption of oilseed meal more than tripled from an annual average 485.1 TMT to over 1.4 MMT.

The greatest increase of oilseed meal consumption occurred in 1980. Apparent consumption for that year was estimated preliminarily at 2.3 MMT, up 47 percent from the 1.6 MMT consumption in 1979. Of the 2.3 MMT total apparent oilseed consumption, soybeans accounted for over 1.3 MMT, safflower 267.6 TMT, and cottonseed 363.8 TMT.

The structure of Mexico's oilseed consumption has changed substantially. Table 26 presents Mexico's apparent oilseed meal consumption by type of oilseed and aggregate meal consumption totals for the period 1961/64 to 1980.

During the early 1960s domestic consumption of oilseed meals was dominated by cottonseed and, to a lesser extent, sesame meal and copra. In the 1961/64 period, for example, 85.4 percent of all domestic oilseed meal consumed was accounted for by 282.1 TMT of cottonseed, 67.7 TMT of sesame meal, and 64.6 TMT of copra. The remaining 14.6 percent of 1961/64 domestic oilseed meal consumption included 26.1 TMT of soybeans, 27.4 TMT of safflower, 9.0 TMT of palm kernel, and 8.2 TMT of linseed.

In the 1975/79 period, cottonseed meal consumption was 267.1 TMT, sesame meal 39.6 TMT, and copra 55.2 TMT, down an average annual

TABLE 25: Domestic Oilseed Production and Annual Rates of Growth by Type of Oilseed, Mexico, 1960/64 - 1981 (thousand metric tons)

Year(s)[a/]	Soybean	Safflower	Cottonseed	Copra	Sesame	Linseed	Sunflower	Palm Kernal	Total Oilseed
1960/64	39.6	42.9	843.7	183.5	155.0	14.6		25.2	1,304.5
1965/69	169.1	155.2	844.9	181.0	162.1	14.5		23.8	1,550.6
1970/74	384.8	308.2	652.5	145.7	171.7	22.5	12.4[b/]	13.4	1,711.2
1975/79	494.1	505.1	489.7	151.3	124.7	15.2	4.1	11.0	1,795.2
1975	598.7	532.3	320.3	147.0	110.7	27.3	2.3	10.4	1,749.0
1976	302.5	240.3	348.9	160.1	84.8	13.3	1.9	14.9	1,166.7
1977	516.3	518.4	658.7	158.8	121.3	20.0	2.2	13.8	2,009.5
1978	334.0	615.6	575.8	160.7	133.9	9.4	7.0	8.4	1,844.8
1979	719.0	619.0	545.0	130.1	173.0	6.0	6.9	7.5	2,206.3
1980[c/]	312.0	446.0	538.0	158.0	176.0	6.4	19.5	8.4	1,664.3
1981[c/]	711.9	371.7	530.2		85.7				
Average annual rates of growth (percent)									
1960/64-1965/69	33.7	29.3	0	-0.3	0.9	-0.1		-1.1	3.5
1965/69-1970/74	17.9	14.7	-5.0	-4.2	1.2	9.2		-10.9	2.0
1970/74-1975/79	5.1	10.4	-5.6	0.8	-6.2	-7.5	-19.9	-3.9	1.0
1960/64-1975/79	18.3	17.9	-3.6	-1.3	-1.4	0.3		-5.4	2.2

Source: Compiled by authors from:
1960-1977: SARH/DGEA, November 1981.
1978-1980: Lopez Portillo 1981C.
SARH/DGEA January 1982.

a/ Crop years.
b/ For 1971-74 period.
c/ Preliminary.

TABLE 26: Apparent Oilseed Meal Consumption and Annual Rates of Growth by Type of Oilseed, Mexico, 1961/64 - 1981 (thousand metric tons)

Year(s)[a/]	Soybean Meal	Safflower Meal	Cottonseed Meal	Copra Meal	Sesame Meal	Linseed Meal	Sunflower Meal	Palm Kernal Meal	Total Oilseed
1961/64	26.1	27.4	282.1	64.6	67.7	8.2		9.0	485.1
1965/69	87.3	84.2	365.1	67.2	73.1	8.7		9.1	694.7
1970/74	364.7	170.0	287.8	52.4	76.8	13.8	8.8[b/]	5.2	975.8
1975/79	685.9	301.2	267.1	55.2	39.5	8.9	46.1	4.4	1,408.4
1975	383.0	315.0	367.2	50.9	69.5	4.0	1.6	4.9	1,205.6
1976	692.7	139.0	194.9	52.9	42.5	15.8	0.9	3.7	1,142.7
1977	655.2	311.1	177.1	57.6	32.4	7.7	0.8	5.4	1,247.5
1978	951.6	369.6	324.0	57.2	40.3	11.5	101.9	5.0	1,889.7
1979	747.0	371.4	263.3	57.6	13.0	5.4	74.6	3.0	1,556.3
1980[c/]	1,364.6	267.6	363.8	46.8	56.7	13.3	134.7	2.7	2,288.2
Average annual rates of growth (percent)									
1961/64-1965/69	30.8	28.3	6.0	0.9	1.7	1.3		0.2	8.3
1965/69-1970/74	33.1	15.1	-4.6	-4.9	1.0	9.5		-10.3	7.0
1970/74-1975/79	13.5	12.1	-1.5	1.1	-12.4	-8.3	44.6	-3.1	7.6
1961/64-1975/79	25.3	18.0	-0.3	-1.1	-3.4	0.5		-4.2	7.6

Source: Tables 27 and 31.

a/ Composite year, see appendix.
b/ Average of 1971-74.
c/ Preliminary.

0.3 percent, 3.4 percent, and 1.1 percent, respectively, from the 1961/64 consumption levels. On the other hand, accelerated rates of growth for soybean and safflower meal consumption were phenomenal. Over the 1961/64 - 1975/79 period, soybean meal consumption increased at an average annual rate of 25.3 percent and safflower at a rate of 18 percent.

Soybean and safflower meal consumption during 1975/79 averaged 685.9 TMT and 301.2 TMT, respectively, and the two combined accounted for greater than 70 percent of total oilseed meal consumption. Another oilseed meal which showed significant consumption growth was sunflower meal (a relatively new commercial oilseed) which averaged 46.1 TMT consumed during 1975/79, up from 8.8 TMT in 1971/74. However, consumption of linseed and palm kernel has remained relatively constant. Over the 1961/64 - 1975/79 period, there have been only fractional declines or increases in the amounts of linseed and palm kernel consumed.

The expanding demand for oilseed meal is reflected in the figures on Mexican production of all oilseed meals and the production of oilseed meals by type. Table 27 presents these meal production comparisons for the period 1961/64 to 1980. Oilseed meal production figures were derived by aggregating domestic oilseed production and net imports and multiplying by the corresponding meal equivalents presented in table 28.

Over the 1961/64 to 1975/79 period, consumption of oilseeds increased an average of 4.2 percent annually, from 1.3 MMT to 2.3 MMT (table 24). However, with the movement of oilseed consumption toward higher meal yielding types of oilseeds, such as soybeans and safflower, aggregate meal production increased an average of 6.1 percent annually, from the average 577.6 TMT in 1961/64 to 1.4 MMT in 1975/79. Total consumption of oilseeds, both domestically produced and imported, yielded an average of 45.6 percent meal in 1961/64. The average had increased to 58.6 percent by 1975/79.

Oilseed and Product Trade

Mexico's foreign trade in oilseeds and oilseed products follows a trend characteristic of a large segment of the Mexican agricultural sector. Oilseed and oilseed product trade is similar to food/feed grain trade. Mexico held a strong trade balance surplus in aggregate

TABLE 27: Domestic Oilseed Meal Production and Annual Rates of Growth by Type of Oilseed, Mexico, 1961/64 - 1980 (thousand metric tons)

Year(s)[a/]	Soybean Meal	Safflower Meal	Cottonseed Meal	Copra Meal	Sesame Meal	Linseed Meal	Sunflower Meal	Palm Kernal Meal	Total Oilseed Meal
1961/64	25.8	27.4	374.5	64.6	67.8	8.6		9.0	577.6
1965/69	95.1	84.4	412.0	67.2	73.1	8.7		9.1	749.6
1970/74	342.4	177.7	288.5	52.4	76.9	13.8	8.8[b/]	5.2	962.0
1975/79	633.1	302.4	266.1	55.2	39.8	8.9	46.1	4.4	1,356.0
1975	369.5	315.9	376.2	50.9	69.5	4.0	1.6	4.9	1,193.0
1976	681.5	144.2	194.9	52.9	42.5	15.8	0.9	3.7	1,136.8
1977	595.9	311.1	177.1	57.6	33.5	7.7	0.8	5.4	1,189.2
1978	862.3	369.6	320.1	57.2	40.3	11.6	101.9	5.0	1,796.5
1979	656.5	371.3	262.0	57.6	13.0	5.4	74.6	3.0	1,464.5
1980[c/]	1,162.8	267.6	315.8	46.8	56.7	13.3	134.7	2.7	2,038.4
Average annual rates of growth (percent)									
1961/64-1965/69	33.6	28.4	2.1	0.9	1.7	0.5		0.2	6.0
1965/69-1970/74	29.2	16.1	-6.9	-4.9	1.0	9.5		-10.3	5.1
1970/74-1975/79	13.1	11.2	-1.6	1.1	-12.3	-8.3	44.5	-3.1	7.1
1961/64-1975/79	24.7	18.0	-2.3	-1.1	-3.6	0.3		-4.2	6.1

Source: Tables 25 and 30.

a/ Composite years, see appendix.
b/ Average of 1971-74.
c/ Preliminary.

TABLE 28: Meal and Oil Production and Processing Loss from Major Oilseeds, Mexico (percentage)

Commodity	Meal	Oil	Processing Loss
Soybeans	72.0	18.0	10.0
Safflower	60.0	35.0	5.0
Linseed	58.0	32.0	10.0
Sunflower[a/]	57.0	38.0	5.0
Sesame	47.0	47.0	6.0
Cottonseed	45.5	16.5	38.0
Coconut	36.0	59.0	5.0
Palm Kernel	36.0	60.0	4.0

Source: SARH/DGEA, November, 1981.

a/ With cuticle.

oilseed and oilseed product trade throughout the 1960s. However, expanding domestic oilseed and oilseed product demand in the 1970s forced an increasing dependence on foreign markets. Mexico imported soybeans, soybean meal and oil, and sunflower seed on a large scale particularly in the latter half of the 1970s.

Large oilseed and oilseed product deficits and resulting imports have continued into the first part of the 1980s. In 1980, according to preliminary estimates, oilseed imports reached 1.3 MMT. Oilseed meal constituted approximately 19 percent of 1980 oilseed imports.

Oilseed trade is especially difficult to analyze due to the multiple primary products of oilseeds. Oilseed trade, for instance, can be carried out by any combination of imports and/or exports of oilseeds, oilseed meals, or oilseed oils. The analysis of the Mexican case is simplified somewhat because Mexico's trade in oilseeds and oilseed products has been limited principally to imports of soybeans, cottonseed, and recently, sunflower seed. Exports are generally limited to sesame seed and cottonseed meal. Because oilseed oils are not of primary interest, they have been omitted from the discussion. Also, in order to discuss Mexico's overall oilseed and oilseed product trade position, oilseeds are converted to their corresponding meal equivalents when necessary.

Imports play an integral part in total Mexican supply of oilseeds and oilseed meals. Table 29 demonstrates the importance of imports in total Mexican oilseed meal consumption. Net imports of the various oilseeds have been converted to their corresponding meal imports in order to derive net meal import equivalents of individual commodities. Finally, all the net meal import equivalents of the individual oilseeds were summed into the total net oilseed meal import equivalents presented in table 29. The total net oilseed meal import equivalents are then compared with total apparent oilseed meal consumption, which is also stated in meal equivalents, to derive Mexico's oilseed meal self-sufficiency percentage.

From a total apparent oilseed meal consumption of 2.3 MMT in 1980, imports accounted for 4.1 MMT, or 48.8 percent, for a self-sufficiency percentage of 51.2 percent (1980 preliminary data). In both the 1961/64 and 1965/69 periods, domestic production of oilseed meal was greater than apparent oilseed meal consumption (a self-sufficiency percentage greater than 100 percent). However, in

TABLE 29: Oilseed Meal Consumption, Imports (Exports), and Self-Sufficiency Percentage, Mexico, 1961/64 - 1980 (thousand metric tons)

Year(s)[a/]	Total Oilseed Meal Apparent Consumption Equivalents	Total Net Oilseed Meal Import (Export) Equivalents	Self-Sufficiency Percentage[b/]
1961/64	485.1	(88.8)	117.6
1965/69	694.7	(59.6)	108.5
1970/74	975.8	120.5	88.4
1975/79	1,408.4	406.7	71.3
1975	1,205.6	19.3	98.1
1976	1,142.7	301.1	67.7
1977	1,247.5	448.3	71.3
1978	1,889.7	716.6	58.2
1979	1,556.3	550.1	70.0
1980[c/]	2,288.2	1,116.7	51.2

Source: Tables 24 and 31.

a/ Composite year, see appendix.
b/ Self-Sufficiency Percentage equals Total Oilseed Meal Domestic Production Equivalents as a percent of Total Oilseed meal Apparent Consumption Equivalents.
c/ Preliminary.

the 1970/74 period, domestic oilseed meal production equaled approximately 88.4 percent of apparent consumption, declining to 71.3 percent in the 1975/79 period. Over the entire 1961/64-1975/79 period, growth in apparent oilseed consumption averaged 7.1 percent annually, substantially higher than the 3.6 percent annual growth in domestic production.

Although the trade statistics for the late 1970s and early 1980s are conflicting and/or incomplete, they all show record oilseed imports in 1980. According to preliminary data, Mexico's 1980 net oilseed imports were approximately 1.3 MMT, up from 633.4 TMT recorded for 1979. Mexico's net oilseed imports in 1980 were dominated by soybeans (896.0 TMT), sunflower (296.0 TMT), and cottonseed (1 9.0 TMT). Net exports were dominated by sesame (52.0 TMT). Table 30 presents Mexico's net oilseed imports (imports minus exports) by type of oilseed and aggregate net import totals for all oilseeds combined 1961/64 - 1980.

During the 1960s, Mexico's aggregate net oilseed trade was positive with exports of safflower seed, coconut, and sesame seed averaging approximately 9.4 TMT. However, principally due to rapidly expanding imports of soybeans, sunflower seed, and cottonseed, Mexico's aggregate oilseed trade became negative during the 1970s. In 1970/74, aggregate net oilseed imports averaged 127.8 TMT annually, increasing to an annual average of 508.5 TMT during 1975/79.

Since the late 1960s and early 1970s, soybeans have dominated Mexico's oilseed imports. Cottonseed, and recently, sunflower seed account for a smaller percentage of oilseed imports. Net imports of soybeans, which averaged only slightly more than 1.1 TMT annually 1961/64, had by the last half of the 1970s reached an annual average of 430.8 TMT. Similarly, although less dramatically, cottonseed imports increased from 1.8 TMT annually 1961/64 to approximately 39.1 TMT annually 1975/79. Mexico's imports of sunflower seed (relatively new in commercial oilseed trade) were increased dramatically beginning in 1978. Imports of sunflower seeds in 1980 accounted for almost 23 percent of total oilseed imports.

Although Mexico was a net oilseed meal exporter in the 1970s, a fairly large foreign trade deficit in oilseed meals developed in the 1970s. Table 31 presents Mexico's net oilseed meal imports (imports

TABLE 30: Net Oilseed Imports (Exports) by Type, Mexico, 1960/64 - 1980 (thousand metric tons)

Year(s)	Soybean	Safflower	Cottonseed	Copra	Sesame	Linseed	Sunflower	Palm Kernal	Total Oilseed
1960/64	1.2	*	1.8	(6.0)	(5.3)	*		0	(8.3)
1965/69	8.2	(14.5)	1.6	0	(6.0)	0.2		0	(10.5)
1970/74	131.6	(12.1)	19.4	0	(11.2)	0.1	*[a]	(*)	127.8
1975/79	430.8	(1.2)	39.1	(0.2)	(37.5)	0	7.4	0	508.5
1975	22.0	(5.8)	0.5	(*)	(12.0)	0	(0.1)	0	4.8
1976	347.9	(0.1)	108.1	(0.1)	(20.3)	0	(0.3)	0	435.2
1977	525.1	*	40.3	0	(13.6)	0	(*)	0	551.8
1978	681.3	*	44.7	0	(35.5)	0	226.8	0	917.3
1979	577.8	(0.1)	0.2	(6.8)	(106.2)	0	160.6	0	633.4
1980[c]	896.0	0	149.0	0	(52.3)	17.0	296.0	0	1,305.7

Source: 1960-75: SARH/DGEA, February 1981, November 1981.
Lopez Portillo, August 1981C.
FAO, FAO Trade Yearbook, various issues.

Notes: * Signifies less than 500 metric tons.
() Equals net exports.

a/ For 1971/74 period.
b/ Preliminary.

TABLE 31: Net Oilseed Meal Imports (Exports) by Type, Mexico, 1960/64 - 1980 (thousand metric tons)

Year(s)	Soybean Meal	Safflower Meal	Cottonseed Meal	Copra Meal	Sesame Meal	Linseed Meal	Sunflower Meal	Palm Kernal Meal	Total Oilseed Meal
1960/64	0.3	0	(85.6)	(*)	(0.1)	(0.5)		0	(85.9)
1965/69	(7.7)	(0.3)	(46.9)	0	(*)	0			(54.0)
1970/74	22.3	7.7	(0.7)	0	(*)	0	0[a/]	0	29.3
1975/79	52.7	0	0.9	0	(0.2)	0	0	0	53.4
1975	13.5	0	(-0.6)	0	0	0	0	0	12.9
1976	11.1	0	0	0	0	0	0	0	11.1
1977	59.3	0	0	0	(1.0)	0	0	0	58.3
1978	89.3	0	3.9	0	0	0	0	0	85.4
1979	90.5	0	1.3	0	0	0	0	0	91.8
1980[c/]	201.8	0	48.0	0	0	0	0	0	249.8

Source: 1960-75: SARH/DGEA, November 1981.
1976-1980: SARH/DGEA, February 1981.
Lopez Portillo, August 1981C.
FAO, FAO Trade Yearbook, various issues.

Notes: * Signifies less than 500 metric tons.
() Equals net exports.

a/ For 1971/74 period.
b/ Preliminary.

minus exports) by type and aggregate import totals for the 1961/64 - 1980 period.

Throughout the 1960s, Mexico exported significant quantities of cottonseed meal which accounted for practically all of Mexico's total net oilseed meal exports (expressed as negative imports in table 31) of 85.9 TMT and 54.9 TMT annually for the 1961/64 and the 1965/69 periods, respectively. However, in the 1970s Mexico's trade in oilseed meals worsened to a deficit position. Although Mexico appears to have preferred importing oilseeds rather than processed meal, significant quantities of oilseed meals were also imported in the 1970s. Net oilseed meal imports for example, averaged 29.3 TMT annually during 1970/74 and 53.4 TMT during 1975/79.

The major proportion of Mexico's oilseed meal imports was soybean meal. Net soybean meal imports averaged 22.3 TMT annually during the 1970/74 period and 52.7 TMT during 1975/79. In 1980, Mexico's net soybean meal imports increased to 201.8 TMT. The only other oilseed meal imported in significant quantities since 1970 has been cottonseed meal. In 1980, net cottonseed meal imports equaled 48.0 TMT.

Mexico's imports of U.S. oilseed and oilseed products are sizable. Furthermore, the majority of Mexico's oilseed and oilseed meal imports historically has been supplied by the United States (table 32). In 1980, USDA/FAS estimated that Mexican imports of U.S. oilseeds and oilseed meals totaled over US$455.9 million, up from US$164.9 million in 1979 and the annual average of US$130.6 million recorded for 1974/78 (Embassy 1982).

In 1981 Mexico's imports of U.S. oilseed and oilseed products declined to US$356.8 million from US$455.9 million in 1980. Mexico's 1981 imports of U.S. soybeans, soybean meal, miscellaneous oilseeds, and other oilseed meals totaled 665.0 TMT, 118.0 TMT, 308.0 TMT, and 88.0 TMT, respectively (table 33).

As was the case for grains, the U.S. share of the Mexican oilseed market declined greatly in 1981. The decline in U.S. oilseed exports came about even as total Mexican oilseed imports increased (Embassy 1981, p. 28).

In an attempt to reduce dependence on the United States, Mexico has negotiated with other countries (principally Brazil and Argentina) in order to satisfy their increasing oilseed and oilseed

TABLE 32: Soybean Imports by Country of Origin, Mexico, 1970-1978 (percentage)

Year	Argentina	Brazil	U.S.	Others	Total
1970	0	0	100.0	0	100.0
1975	0	(0)	100.0	0	100.0
1976	0	24.3	75.4	0.3	100.0
1977	8.4	11.8	79.0	0.7	100.0
1978[a/]	9.1	0	90.9	0	100.0

Source: SPP 1980A.

Note: Includes soybean (seed), soy oil and soy meal imports.
(0) signifies less than 0.05 percent.

a/ Preliminary.

TABLE 33: Volume and Value of U.S.-Sourced Mexican Imports of Soybeans, Soybean Meal, Other Oilseeds, and Other Oilseed Meals, 1974-1981

Year[a/]	Soybeans		Soybean Meal		Other Oilseeds		Other Oilseed Meals		Total Value
	Volume	Value	Volume	Value	Volume	Value	Volume	Value	
1974	337	81.6	24	4.3	72	14.1	31	4.5	104.5
1975	21	6.7	22	3.9	9	2.0	4	0.3	12.9
1976	230	57.2	5	0.9	65	12.9	5	0.7	71.7
1977	413	108.3	191	57.3	32	7.5	4	0.4	173.5
1978	700	178.8	97	21.8	353[b/]	89.2	4	0.5	290.3
1979	408	118.3	147	43.2	3	1.5	7	1.9	164.9
1980	931	259.4	178	48.3	461[b/]	126.2	102[c/]	22.0	445.9
1981	665	207.9	118	29.7	308[c/]	109.1	88[c/]	10.1	356.8
October-June									
1980/81	745	234.9	229	60.2	22	10.1	11	5.8	311.0
1981/82	239	64.7	263	60.3	15	7.5	2	0.4	132.9

Source: CY1974-CY1981: Embassy, June 1981 and June 1982.
October-June, 1980/81-1981/82: USDA/ERS, Fatus, Foreign Agricultural Trade of the United States, July/August 1982.

Note: Volume in TMT, value in million U.S. dollars.

a/ Calendar year.
b/ Other soilseed imports included:
1978: cottonseed 27.3 TMT, sunflower 319.4 TMT, safflower 196 MT, and others 5,972 MT.
1980: cottonseed 144.9 TMT, sunflower 307.5 TMT, and safflower 6.5 TMT.
1981: cottonseed 15.9 TMT, sunflower 289.5 TMT, and safflower 25 MT.
c/ Other oilseed meal and cake imports included:
1980: cottonseed 54.4 TMT, linseed 9 MT, and others 47.3 TMT.
1981: cottonseed 76.6 TMT and linseed 24 MT.

meal demand (Embassy 1981). In 1981, supply/purchase agreements were signed with both Argentina and Canada.

As in the case for Mexico's grain imports, various agricultural product supply/purchase agreements recently provided for Mexican imports of U.S. oilseed and oilseed products. For example, USDA/FAS estimated that the United States supplied more than 95 percent of Mexico's oilseed imports during 1980. The only other non-U.S. oilseed imports in 1980, according to USDA/FAS, included small quantities of Brazilian soybeans (40.0 TMT) and Canadian linseed and rapeseed (7.0 TMT). A 1981 supply/purchase agreement provided for Mexico to purchase between 1.15 and 1.48 MMT of U.S. oilseed and oilseed products. In addition, Mexico imported a total of 494.0 TMT of non-U.S. soybeans, including 278.0 TMT from Argentina and the balance from Brazil (Embassy 1982, p. 28). In a 1982 supply/purchase agreement, the United States agreed to supply 100.0 TMT of soybeans and 100.0 TMT of cottonseed to Mexico.

Oilseed Prices

Since 1960, prices of oilseeds (at the producer level) have lagged behind domestic price levels, as measured by the GDP deflator. Over the 1960-80 period, the GDP increased at a 10.6 percent annual rate of growth in prices. At the same time, average rural producer prices of major oilseed crops (soybeans, safflower, cottonseed, sesame, copra, linseed, and palm kernel) increased from a minimum of 6.8 percent to a maximum of 9.5 percent annually. Table 34 presents the annual rates of growth of average rural producer prices and CONASUPO guaranteed price levels (for those oilseed crops covered) over the 1960/65-1975/80 period.

CONASUPO guaranteed producer oilseed prices have been in effect since 1965/66 for soybeans, safflower, cottonseed and sesame; since 1972 for sunflower; and since 1975 for copra. Linseed and palm kernel have no CONASUPO guaranteed price.

Again, as was the case for CONASUPO guaranteed grain prices, CONASUPO oilseed prices remained relatively unchanged from their inception in 1965/66 until 1973/74. Since 1973/74, CONASUPO oilseed prices have largely kept pace with similar increases in domestic price levels as measured by the GDP deflator. Over the 1970-75 period, for example, CONASUPO guaranteed oilseed price increases

TABLE 34: Rates of Growth of CONASUPO Guaranteed and Average Rural Producer Prices, Mexico, 1960-1980 (average annual percentage)

Period	GDP Deflator	Soybeans		Safflower		Cottonseed		Sesame	
		CONASUPO	Average Rural	CONASUPO	Average Rural	CONASUPO	Average Rural	CONASUPO	Average Rural
1960-65	3.5		3.1		1.9		3.5		1.8
1965-70	3.5	-5.1[a/]	1.9	0[a/]	2.4	0[a/]	5.6	0[a/]	3.8
1970-75	12.4	21.9	15.4	18.5	16.9	22.4	17.1	19.1	17.8
1975-80	24.1	18.0	17.2	11.4	16.4	17.8	14.7	13.9	14.4
1960-80	10.6	12.2[c/]	9.5	10.4[b/]	9.2	14.0[b/]	9.0	11.5[b/]	9.2

Period	Copra		Sunflower		Linseed	Palm Kernal
	CONASUPO	Average Rural	CONASUPO	Average Rural	Average Rural	Average Rural
1960-65		4.0			4.0	4.9
1965-70		1.0			-0.6	2.5
1970-75		17.1	14.5[c/]	22.1	20.8	10.1
1975-80	15.9	14.7	24.3	8.8	4.5	9.9
1960-80		9.0			6.9	6.8

Source: GDP deflator: Bank of Mexico as quoted in NAFINSA.
CONASUPO prices: CONASUPO.
Average rural price: SARH/DGEA, September 1981.

Note: CONASUPO prices are marketing year and rural prices are calendar year.

a/ 1966-1970
b/ 1966-1980
c/ 1972-1975

averaged 14.5 percent-22.4 percent annually, exceeding domestic inflation that averaged 12.4 percent. Over the 1975-80 period, increases in the CONASUPO guaranteed prices of the various oilseeds ranged from a low of 11.4 percent for safflower to a high of 24.3 percent annually for sunflower, whereas domestic inflation averaged 24.1 percent annually.

In 1980, CONASUPO guaranteed oilseed prices (for the 1980/81 marketing year) were set at 8,000 pesos/MT (US$348.58) for soybeans, 6,000 pesos (US$261.44) for safflower, 5,000 pesos (US$217.86) for cottonseed, 11,500 pesos (US$501.09) for copra, and sesame, and 8,000 pesos (US$348.58) for sunflower.

In 1981, guaranteed prices for the 1981/82 marketing year were increased 30 percent for safflower, 35 percent for soybeans, cottonseed, and sesame, 39 percent for copra, and 40 percent for sunflower. Guaranteed crop prices for 1981 stood at 7,800 pesos/MT for soybeans, 7,800 pesos for safflower, 6,750 pesos for cottonseed, 16,000 pesos for copra, 15,525 pesos for sesame, and 11,200 pesos for sunflower.

THE ANIMAL FEED INDUSTRY

The Mexican feed manufacturing industry is one of the fastest growing industries within the Mexican economy in general, and the food/feed sector in particular. During the 1960-75 period, for example, Mexico's gross domestic product (GDP) increased at a real annual rate of approximately 6.6 percent. Over the same period, according to the Mexican Industrial Census, the food/feed sector's production value increased more than the GDP at a real annual rate of 8.5 percent. The production value growth of the animal feed industry more than doubled the GDP at a real annual rate of 14.1 percent.

Much of the increase in production value for Mexico's animal feed industry reflects phenomenal rates of growth in the 1960s. Output value increased at a 20 percent real annual rate during the 1960-65 period and at 17 percent during the 1965-70 period. In comparison, the real rate of growth of output value for the 1970-75 period slowed to 5.8 percent (table 35).

Reliable data for yearly production (volume) of the balanced feed industry, especially prior to 1970, are not readily available. However, estimates of Mexico's balanced feed production published by the National Section of Balanced Animal Feed Producers (SENAPABA) of the Mexican Chamber of Manufacturing Industries (CANACINTRA) are available for 1970-80. Table 36 presents Mexico's manufactured feed output and annual growth rates for 1970-80, as recorded by CANACINTRA.

According to these estimates, Mexico's balanced feed output grew at an average annual rate of approximately 6.8 percent, increasing from 3.9 million metric tons (MMT) in 1970 to 7.5 MMT in 1980. Although output growth remained fairly constant, slower rates of growth were recorded for 1972 (negative), 1974 (2.5 percent), 1979 (1.3 percent), and 1980 (3.3 percent). The downturn in balanced feed output growth in 1979 and 1980 was caused by agricultural supply and distribution problems resulting from severe weather in a large part of Mexico.

Although no extended time-series exists for total Mexican feed production by type of feed, information supplied by CANACINTRA allows a comparison for 1979-80. These data on feed production by type of feed and the percentage shares are presented in table 37.

TABLE 35: Real Annual Rates of Growth of Output Value for GDP, Manufacturing Sector, Food/Feed Industries, and the Animal Feed Industry, Mexico, 1960/65-1970/75 (percentage)

Category	1960/65	1965/70	1970/75	1960/75
GDP	7.1	6.9	5.7	6.6
Manufacturing sector	14.8	8.3	4.2	9.1
Food/feed industries	12.8	7.5	5.2	8.5
Animal feed industry	20.0	17.0	5.8	14.1

Source: GDP and manufacturing sector growth rates: Bank of Mexico, S.A., as quoted in NAFINSA.

Food/feed industries and animal feed industry growth rates industrial censuses (1960, 1965, and 1975) as quoted in Montes de Ocaluja and Escudero Columna.

TABLE 36: Total Feed Production and Average Annual Rates of Growth, Mexico, 1970-1980

Year(s)	Balanced Feed Production (TMT)	Average Annual Rate of Growth (Percent)
1970	3,864	
1971	4,411	14.2
1972	4,406	-0.1
1973	4,910	11.4
1974	5,033	2.5
1975	5,563	10.5
1976	6,085	9.4
1977	6,515	7.1
1978	7,133	9.5
1979	7,226	1.3
1980	7,445	3.3
1970-80		6.8

Source: 1970-79: CANCINTRA/National Section of Animal Feed Producers (SENAPABA) as quoted in Presidencia de la Republica et al. 1980: CANACINTRA/SENAPABA 1981A.

TABLE 37: Total Feed Production by Type of Feed, Mexico, 1979/80 (thousand metric tons)

Type of Feed	Average Annual Feed Production	Percent of Total Feed Production
Poultry (total)	4,064.0	56.3
Eggs	2,734.0	37.9
Broilers	1,330.0	18.4
Swine	1,700.0	23.6
Cattle (total)	1,380.0	19.2
Dairy	1,181.5	16.4
Beef	198.5	2.8
Others	66.0	0.9
Total feed production	7,210.0[a/]	100.0

Source: CANACINTRA/SENAPABA 1981A.

a/ Does not correspond with the average 1979/80 production of 7,335.5 TMT recorded in Table 36.

According to the CANACINTRA estimates, from total Mexican feed production that averaged 7.2 MMT annually 1979/80, nearly 40 percent was egg layer feed. Combined with broiler feed production, the Mexican poultry subsector consumed more than 56 percent of Mexico's aggregate feed output. The remaining 44 percent of total average annual 1979/80 feed production, in order of importance, was swine feed, dairy cattle feed, beef cattle feed, and other feeds (0.9 percent).[11/]

ORGANIZATION OF THE INDUSTRY

Mexico's feed manufacturing industry is dominated by a few producers with a relatively small number of large production plants. Although data are not available to compare feed production by company, comparisons are made on the basis of concentration according to value of output per feed plant. This information is obtained every five years through the industrial census.

According to the 1975 industrial census, of 305 Mexican feed plants, 42.5 percent of the total production value was produced by the largest nine plants and 71.6 percent by the largest 24 plants (table 38).[12/] Compared with the same type of information obtained in the 1970 industrial census, there was a decline in the total number of plants from 318 recorded in 1970 to the 305 in 1975. Furthermore, the census suggests a slight movement toward larger production plants. In 1970, for instance, the top five plants produced 31.5 percent of total feed (value) and the top 20 plants 68.4 percent.

Mexico's feed manufacturing industry consists of several groups of producers. One group, termed the commercial or organized industry, is dominated by a half dozen multinational corporations and large Mexican companies. Another segment is comprised of livestock and poultry producers and/or their representative associations integrated into feed production. This segment varies in composition from a group of characteristically large producer integrates to a large group of livestock and poultry producers of many sizes. The producer integrates compound feed for sale and self-consumption, while the small-to-large livestock and poultry producers manufacture feed primarily for self-consumption. The government-owned, although

TABLE 38: Level of Concentration of the Feed Industry by Size of Plant, Mexico, 1970 and 1975

Size of Plant	Number of Feed Plants	Percentage Total Feed Plants	Percentage of Total Production Value
1970			
Artisans	115	36.2	0.1
Small	132	41.5	5.1
Medium	51	16.0	26.4
Large	15	4.7	36.9
Giant	5	1.6	31.5
Total (1970)	318	100.0	100.0
1975			
Artisans	69	22.6	0.1
Small	158	51.8	4.2
Medium	54	17.7	24.1
Large	15	4.9	29.1
Giant	9	3.0	42.5
Total (1975)	305	100.0	100.0

Source: Industrial censuses (1970 and 1975) as quoted in SPP 1981.

semiautonomous, company ALBAMEX and ICONSA, the subsidiary of CONASUPO, make up another segment of the feed manufacturing industry.

The various segments of the feed manufacturing industry can be roughly divided into the following three divisions:

(1) private industry (also termed the organized industry)
- commercial producers ranging from large national companies and multinational corporations to local feed manufacturers;

(2) producer integrates (individuals and/or associations)
- poultry and swine producers who produce animal feed primarily for self-consumption but may market part of their production; and

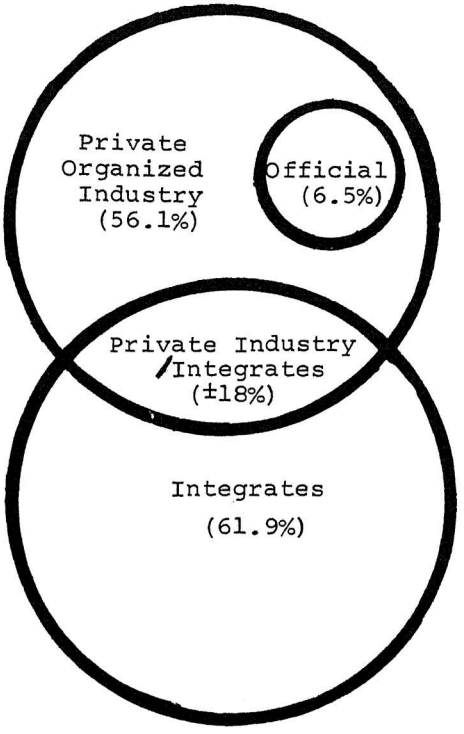
(3) official
- the government-owned feed manufacturers ALABAMEX and ICONSA

Several livestock and poultry integrates which market a large proportion of their feed output do not fit neatly in this classification scheme. These integrates could be classified as part of the private industry. Furthermore, ALBAMEX is sometimes classified as part of the private industry as its production is included with that of the private rather than official industry. Figure 7 represents the organization of Mexico's feed industry.

Table 39 presents Mexico's total feed production and shares of total feed production for the three classifications. An attempt has been made through data supplied by CANACINTRA to isolate the commercialized integrates which overlap both the private industry and producer integrate groups.

As reported by CANACINTRA, the private industry, including integrates, accounted for 56.1 percent while producer integrates alone for 43.3 percent of total Mexican feed output in 1980. However, when the commercialized integrates are removed, the private industry's share of total Mexican output becomes 38.1 percent. Conversely, when the commercialized integrates are added to the non-commercialized producer integrates, their share is increased to 62 percent. In any case, depending on the type of classification system used, livestock and poultry integrates make up an important, majority share of total Mexican feed production.

FIGURE 7: Feed Production by Type of Producer, Mexico, 1978/1979



Source: Table 39.

TABLE 39: Feed Production by Type of Producer, Mexico, 1970-1980 (thousand metric tons)

Year	Organized Industry	Percentage of National Total	Integrates	Percentage of National Total	National Total	Integrate Participants in the Organized Industry	Organized Industry Without Integrates	Official
1970	2,135	55.3	1,729	44.7	3,864			
1971	2,246	50.9	2,165	49.1	4,411			
1972	2,235	50.7	2,171	49.3	4,406			17
1973	2,650	54.0	2,260	46.0	4,910			46
1974	2,850	56.6	2,183	43.4	5,033			61
1975	3,150	56.6	2,413	43.4	5,563			87
1976	3,530	58.0	2,655	42.0	6,085			117
1977	3,709	56.9	2,806	43.1	6,515			172
1978	3,860	54.1	3,273	45.9	7,133			229
1979	4,014	55.5	3,212	44.5	7,226	1,255	2,759[a/]	305
1980	4,220	56.7	3,225	43.3	7,445	1,387	2,833[a/]	345[b/]
Average annual rate of growth (percent)								
1970-80	7.1		6.4		6.8			45.7[c/]

Source: CANACINTRA 1981A, and Presidencia de la Republica et al.

a/ Calculated.
b/ Preliminary.
c/ 1972-80 period average.

Estimates are also made of the composition of feed produced by the three major feed manufacturing groups: private or organized industry (without commercialized integrates), integrates, and official. Figure 8 compares each segment's share of egg layer, broiler, swine, and cattle feed production.

ORGANIZED INDUSTRY

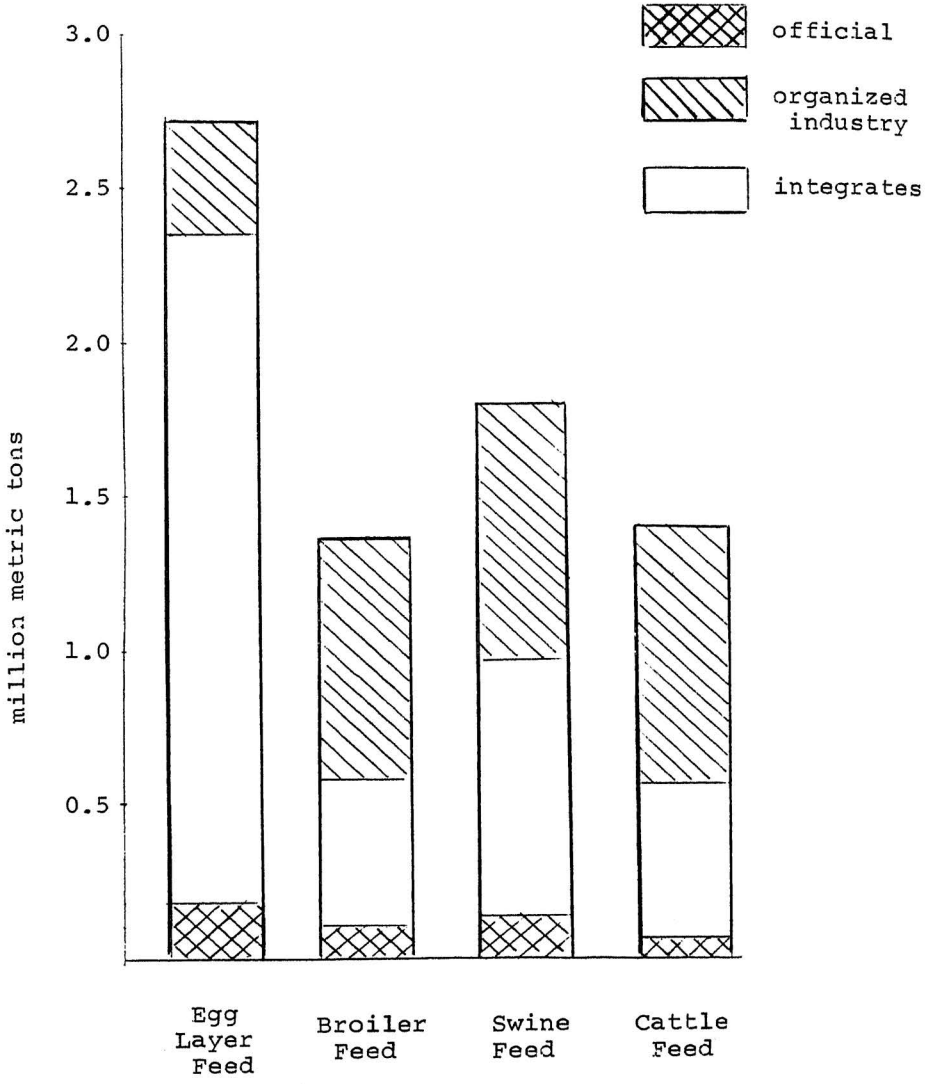
Mexico's private feed manufacturing industry is organized under two types of feed producer associations: CANACINTRA's National Section of Balanced Animal Feed Producers (SENAPABA)[13/] and the National Association of Animal Feed Manufacturers (Asociacion Nacional de Fabricantes de Alimentos Pecuarios A.C.).

In 1980, the private or organized industry produced 56.7 percent of Mexican feed output (CANACINTRA 1981B, p. 5). According to CANACINTRA, feed production value of the organized industry in 1980 totaled 20,100 million pesos. Eighty existing feed plants had an output capacity of 6.4 MMT (CANACINTRA, 1981B, p. 7).[14/]

The largest proportion of feed production is poultry feed, estimated to have been 53 percent of the organized industry's total feed production in 1979/80. Approximately two-fifths of poultry feed was estimated as egg-layer feed and three-fifths broiler feed. The remaining 46 percent of the 1980 feed production was divided into swine feed (28 percent); cattle feed (17 percent)--further divided into dairy cattle (14 percent) and beef cattle feed (3 percent)--and finally, other feeds (2 percent) (table 40).

The limited time-series data for feed production of the organized industry suggest some interesting trends in the types of feed produced over the past decade. From 1970 to 1980, feed production of the organized industry increased an average of 7.1 percent annually, and nearly doubled from 2.1 MMT in 1970 to 4.2 MMT in 1980. The highest growth rates of output by type of feed were recorded for dairy cattle feed (14.7 percent), beef cattle feed (13.4 percent), and swine feed (12.9 percent). During the same period, annual growth rates of poultry feed were the lowest with a 9.7 percent rate for broiler feed and a negative 1.2 percent rate for egg-layer feed. However, instead of reflecting a relative decline in the importance of poultry feed, this trend likely reflects the

FIGURE 8: Feed Production by Type of Feed and Type of Producer, Mexico, 1979/1980 (thousand metric tons)



Source: CANACINTRA/SENAPABA 1981A.

TABLE 40: Organized Industry Feed Production by Type of Feed and Aggregate Totals, Mexico, 1970-1980
(thousand metric tons)

Year	Total Feed Production (TMT)	POULTRY FEED				SWINE FEED		CATTLE FEED				OTHER
		Eggs		Broilers				Dairy		Beef		
		(TMT)	(Percentage of Total)	(TMT)	(Percentage of Total)	(TMT)	(Percentage of Total)	(TMT)	(Percentage of Total)	(TMT)	(Percentage of Total)	
1970	2,135	1,100	51.5	500	23.4	350	16.4	150	7.0	35	1.7	
1971	2,242	1,155	51.5	525	23.4	367	16.4	158	7.0	37	1.6	
1972	2,235	1,100	49.2	575	25.7	350	15.7	170	7.6	40	1.8	
1973	2,650	1,298	49.0	689	26.0	397	15.0	212	8.0	54	2.0	
1974	2,850	1,368	48.0	769	27.0	427	15.0	230	8.1	56	2.0	
1975	3,150	1,575	50.0	787	25.0	472	15.0	252	8.0	64	2.0	
1976	3,500	1,400	40.0	1,015	29.0	630	18.0	315	9.0	70	2.0	
1977	3,780	1,477	39.1	1,100	29.1	718	19.0	340	9.0	74	1.9	1.9
1978	3,930	1,525	38.8	1,130	28.8	780	19.8	350	8.9	75	1.9	1.8
1979	4,076	949	23.3	1,224	30.0	1,141	28.0	583	14.3	117	2.9	1.7
1980	4,220	970	23.0	1,266	30.0	1,183	28.0	591	14.0	127	3.0	2.0
Average annual rates of growth (percent)												
1970-80	7.1	-1.2		9.7		12.9		14.7		13.4		

Source: CANACINTRA/SENAPABA 1981B.

Note: Other includes horses, rabbits, dogs, and such animals.

increasing importance of poultry producer integrates in the production of poultry feed.

Seventy-one percent of the eighty organized industry feed plants are located principally in regions with high livestock/poultry production: the Federal District (13 plants), Jalisco (11), Nuevo Leon (9), Durango (7), Mexico (7), Guanajuato (5), and Yucatan (5). According to information supplied by CANACINTRA, 30 percent of these plants are controlled by three feed companies. Eleven of the 80 feed plants existing in 1980 were owned by Anderson Clayton & Co., nine by Purina S.A. de C.V., and four by La Hacienda (International Multifoods).[15/] Table 41, indicating by state the location of the organized industry's feed plants, illustrates the geographic concentration of balanced feed production.

Corresponding to the concentration of feed plants, a great percentage of feed production is controlled by a few large feed manufacturers. In 1977, five of the largest feed companies produced 82.5 percent of total 3.9 MMT of feed output. Anderson Clayton & Co., Purina S.A. de C.V., and La Hacienda together produced an estimated two-thirds of the organized industry's feed output and approximately one-third of total Mexican feed output. According to estimates made for the same year, Anderson Clayton & Co. and Purina S.A. de C.V. each produced approximately 27.5 percent while La Hacienda produced 11.9 percent of the total feed output of the organized industry. Two large Mexican companies, Malta and Flagasa, respectively accounted for 8.3 percent and 7.1 percent of organized industry feed production. Table 42 presents Mexico's largest organized industry feed manufacturers and their percentage share of the 1977 organized industry feed output.

Further evidence of the concentration of the industry is provided by the 1975 industrial census. Of the 305 Mexican feed production plants, the largest four plants produced 23.8 percent of the total national feed production value. Of these four plants, the top two belonged to Purina S.A. de C.V., the third largest to Anderson Clayton & Co., and the fourth largest to Malta S.A. (SAM 1980A).

There has been a great degree of backward vertical integration by livestock and poultry producers into production of feed. As noted earlier, egg producers in particular have increasingly moved toward

TABLE 41: Organized Industry and Major Contributors' Feed Plants by State, Mexico

State	Organized Industry Plants	Anderson Clayton & Co. Plants	Purina S.A. de CV. Plants	La Hacienda Plants	Albamex Plants
Auguascalientes	1	-	-	-	-
Baja California Norte	2	-	1	-	-
Coahuila	3	1	1	-	-
Colima	1	1	-	-	-
Chihuahua	2	-	-	-	1
Distrito Federal	13	-	-	1	-
Durange	7	1	-	-	-
Guanajuato	5	1	1	-	-
Guerrero	1	-	-	-	-
Hidalgo	1	-	-	-	-
Jalisco	11	2	1	1	4
Mexico	7	1	1	-	1
Michoacan	2	-	-	-	-
Morelos	1	-	-	-	-
Nuevo Leon	9	1	1	1	-
Puebla	3	-	1	-	-
Queretaro	2	-	-	-	-
San Luis Potosi	1	-	-	-	-
Sinaloa	2	1	-	-	-
Sonora	2	-	1	-	-
Tamaulipas	2	1	-	-	1
Tlaxcala	3	1	-	1	1
Veracruz	2	-	1	-	-
Yucatan	5	-	-	-	1
Total	80	11	9	4	9

Source: CANACINTRA/SENAPABA 1981B.

TABLE 42: Principal Organized Industry Balanced Feed Producers, Mexico, 1977

Name of Company	Feed Production (thousand metric tons)	Percentage of Total Organized Industry Feed Production
Anderson Clayton & Co.	1,067.7	27.6
Purina, S.A. de CV.[a/]	1,063.5	27.5
La Hacienda (International Multifoods)	458.5	11.9
Malta S.A.	322.2	8.3
Flagasa	274.7	7.1
Others	676.0	17.5
Total (organized industry)	3,862.5	100.0

Source: ITC

a/ Including Purina Pacifico and Purina Noroeste feed production equals 1,196.8 TMT.

the production of their own balanced feed. The integration into feed has occurred partially in order to take advantage of subsidized government-supplied inputs. Large feed manufacturers have also taken advantage of subsidized inputs by vertically integrating into the production of poultry and livestock and other sectors of the food system.

Examples of vertical integration by feed manufacturers are provided by the two organized industry leaders Anderson Clayton & Co. and Purina S.A. de C.V.[16/] Anderson Clayton's business interests in Mexico's agricultural industry date back to the early 1930s. This company's primary involvement in the industry included the processing (toasting, degraining, and cleaning) of agricultural products, especially cotton and cottonseed, as well as the production of animal feed. Since that time, Anderson Clayton's involvement has expanded to the production of oilseed meal and grain flour, processing of oilseeds, and the production of vegetable oils, margarine, and soap products. In the animal feed industry, Anderson Clayton's most rapid expansion occurred in the late 1950s and 1960s. During this period, the majority of their feed plants were brought on line. The other major organized industry leader, Ralston Purina, has been actively involved in Mexican industry since 1957. During the 1957-67 period, according to the 1975 industrial census, all but two of Purina's feed plants were brought on line. Ralston Purina, in addition to being a leading feed producer, is also integrated into the production of other livestock and poultry production inputs. Such involvement has centered around the breeding of poultry and swine. Ralston Purina, through its company Nutricos S.A., has also moved into poultry meat production, slaughtering, and marketing. In poultry meat production, for example, Nutricos S.A. provides 6 percent of national production (SAM 1980A).

INTEGRATES

Two broad categories of integrated livestock/poultry producers and feed producers manufacture their own feed. The first group is made up principally of large integrates that manufacture their own feed and market a considerable proportion of their output. The second group consists principally of producers and/or associations that produce feed for their own consumption needs.

Information supplied by CANACINTRA and presented in table 43 compares the degree of integration of major balanced animal feed users. According to the data, from a total balanced feed production that averaged 7.2 MMT annually 1979/80, 54.7 percent was produced by integrates. This includes integrates who also are part of the organized feed industry. Out of a total integrate feed production of 4.0 MMT, 53.7 percent was egg layer feed, 12.3 percent broiler, 21.5 percent swine, and 12.4 percent cattle feed. Also, CANACINTRA reports that of all balanced feed produced for the major users (egg, broiler, swine, and cattle production), integrates supplied 77.5 percent, 36.6 percent, 50.0 percent, and 35.1 percent, respectively.

The high degree of integration by egg producers into the production of animal feed is principally due to the concentration of egg production, the input/output price squeeze resulting from government controlled egg prices, and the necessity to produce feed in order to be eligible for direct CONASUPO subsidies. Swine producers are also heavily integrated into feed production. The large proportion of swine managed under traditional production systems could help explain the high proportion of swine feed produced by integrates.

OFFICIAL SEGMENT

The third category of balanced animal feed manufacturers is made up of the federally owned, although semiautonomous, company Alimentos Balanceados de Mexico, S.A. (ALBAMEX). In addition, CONASUPO operates feed manufacturing plants under Industrias CONASUPO (ICONSA).

In the early 1970s, the Mexican government entered into feed production by buying out a private sector company. Since that time, ALBAMEX has grown considerably and it now operates some of the newest and largest production facilities in the country. The government, in addition to animal feed, also manufactures lysine, which is a major feed additive.

ALBAMEX, operating nine production plants in 1981, has become an increasingly important contributor to total Mexican output of animal feed. During the 1979/80 period, the official sector accounted for 6.5 percent of total annual feed production that averaged 7.2 MMT.[17/] Table 44 presents the official sector's average annual feed

TABLE 43: Integrate Feed Production by Type of Feed and Comparisons, Mexico, 1979/1980 (thousand metric tons)

Type of Feed	Average Annual Integrate Feed Production	Percentage of Total Integrate Feed Production	Total Average Annual Feed Production	Percentage of Total Feed Production Accounted for by Integrates
Poultry (total)	2,606.5	66.0	4,064.0	64.1
Eggs	2,119.5	53.7	2,734.0	77.5
Broilers	487.0	12.3	1,330.0	36.6
Swine	850.0	21.5	1,700.0	50.0
Cattle	488.5	12.4	1,380.0	35.1
Total integrate feed production	3,945.0	100.0	7,210.0	54.7

Source: CANCINTRA/SENAPABA 1981A.

TABLE 44: Official Sector Feed Production by Type of Feed, Mexico, 1979/80 (thousand metric tons)

Type of Feed	Average Annual Official Feed Production	Percentage of Total Official Feed Production
Poultry (total)	270.5	57.7
Eggs	164.0	35.0
Broilers	106.5	22.7
Swine	137.5	29.3
Cattle	61.0	13.0
Total official feed production	469.0	100.0

Source: CANACINTRA/SENAPABA 1981A.

production during 1979/80. Also, production of lysine was reported preliminarily at 187.3 TMT in 1980 (Lopez Portillo 1981C, p. 651).

By operating these feed production plants, the federal government is able to regulate more effectively feed prices and market activities of the feed industry. This is especially important because CONASUPO supplies a substantial amount of subsidized feed inputs and because feed prices are under government control.

GOVERNMENT POLICY

Mexico's balanced feed industry, like much of the Mexican economy, is greatly influenced by government policies. In addition to intervention into the major feed input markets (i.e., grains and oilseeds) and direct involvement in the industry though ALBAMEX and ICONSA, the Mexican government directly influences the mixed feed industry through feed import and price policies.

All feed sold in Mexico through commercial channels is subject to price controls. Instead of a set price, however, the controls come in the form of a regulated price. Feed producers must submit their price schedules to SECOM, which then approves or disapproves the manufacturers' requested price. Feed inputs acquired from CONASUPO at subsidized rates (grain sorghum used in the production of egg layer feed, for example) must then be reflected in the feed producers' sale price.

In recent years the Mexican government also has allowed imports of substantial quantities of pre-prepared animal feeds. In 1980, for example, feed imports included 45.8 TMT of poultry feed, 11.7 TMT of dairy cattle feed, and 22.3 TMT of livestock feed. Feed imports in 1981 included 18.6 TMT of poultry feed, 12.1 TMT of dairy cattle feed, and 29.1 TMT of livestock feed (Embassy 1982).

APPENDIX

COMPOSITE YEAR

Mexican crop year production data is recorded for the year in which it is produced and not the year in which it is consumed. The crop year extends from the summer of one year to the fall of the next year. Therefore, the 1979/80 crop year production data, for example, include the 1980 fall-harvested crop which is consumed during the following production year.

This method of recording production data presents a problem for the determination of apparent consumption (domestic production plus net imports). Crops such as corn, grain sorghum, and soybeans are harvested predominantly in the fall of the year. Apparent consumption of these crops for 1980 should include that portion of production recorded for 1978/79 that was harvested in the fall of 1979 plus the proportion of production recorded for the 1979/80 crop year that was harvested in the spring of 1980.

To appropriately align the data to arrive at a value for apparent consumption, a composite year was derived. For example, the 1980 composite year apparent consumption for crops harvested predominantly in the fall includes production recorded for the 1978/79 crop year and net imports in calendar year 1980. For crops harvested predominantly in the spring (i.e., wheat and safflower), the 1979/80 crop year production and net imports in calendar year 1980 are aggregated to arrive at apparent consumption.

TABLE A.1 Corn Area, Yield, Production, and Trade

Year	Harvested Area (thousand hectares)	Yield (kg/hectare)	Production (TMT)	Imports (TMT)	Exports (TMT)
1960	5,558.4	975	5,419.8	28.5	457.5
1961	6,287.7	993	6,246.1	34.1	0.1
1962	6,371.7	995	6,337.4	17.9	3.8
1963	6,963.1	987	6,870.2	475.8	0.4
1964	7,460.6	1,133	8,454.0	46.5	282.8
1965	7,718.4	1,158	8,936.4	12.0	1,347.2
1966	8,286.9	1,119	9,271.5	4.5	851.9
1967	7,610.9	1,130	8,603.3	5.1	1,254.0
1968	7,675.8	1,181	9,061.8	5.5	896.6
1969	7,103.5	1,184	8,410.9	8.4	789.1
1970	7,439.7	1,194	8,879.4	761.8	2.6
1971	7,691.7	1,272	9,785.7	18.3	274.4
1972	7,292.2	1,265	9,222.8	204.2	425.9
1973	7,606.3	1,132	8,609.1	1,145.2	31.6
1974	6,717.2	1,168	7,847.8	1,282.1	1.6
1975	6,694.3	1,262	8,448.7	2,660.8	6.3
1976	6,783.2	1,182	8,017.3	913.8	4.2
1977	7,469.6	1,357	10,137.9	1,985.6	1.4
1978	7,191.1	1,520	10,930.1	1,343.0	1.7
1979	5,568.8	1,517	8,752.0	745.0	2.0
1980	6,955.2	1,770	12,383.0	3,349.0	0

TABLE A.2 Wheat Area, Yield, Production, and Trade

Year	Harvested Area (thousand hectares)	Yield (kg/hectare)	Production (TMT)	Imports (TMT)	Exports (TMT)
1960	839.8	1,417	1,190.0	4.4	0.1
1961	836.5	1,676	1,401.9	7.6	0.2
1962	747.7	1,946	1,455.3	27.1	1.3
1963	819.2	2,079	1,703.0	46.2	72.6
1964	818.3	2,692	2,203.1	62.4	576.3
1965	858.3	2,505	2,150.4	12.5	684.9
1966	730.8	2,254	1,647.4	1.1	47.8
1967	778.4	2,727	2,122.4	1.2	279.1
1968	790.6	2,632	2,080.7	1.6	3.0
1969	841.3	2,765	2,326.1	0.8	252.9
1970	886.2	3,020	2,676.5	1.1	41.7
1971	614.2	2,981	1,830.9	177.1	85.8
1972	686.7	2,634	1,809.0	641.5	16.9
1973	640.5	3,264	2,090.8	719.6	12.4
1974	774.1	3,602	2,788.6	976.6	20.1
1975	778.2	3,596	2,798.2	88.5	45.1
1976	894.1	3,761	3,363.3	5.3	21.0
1977	708.9	3,464	2,455.8	456.4	25.5
1978	759.5	3,666	2,784.7	458.5	21.5
1979	588.3	3,881	2,273.0	1,969.0	22.0
1980	738.5	3,771	2,784.0	799.0	20.0

TABLE A.3 Grain Sorghum Area, Yield, Production, and Trade

Year	Harvested Area (thousand hectares)	Yield (kg/hectare)	Production (TMT)	Imports (TMT)	Exports (TMT)
1960	116.4	1,797	209.3	9.5	0.1
1961	116.7	2,491	290.6	31.3	(0)
1962	117.6	2,516	295.9	58.7	(0)
1963	197.6	2,036	402.2	137.9	0.1
1964	276.5	1,901	525.6	21.3	0.4
1965	314.4	2,376	747.0	33.9	0
1966	575.9	2,450	1,411.0	23.0	34.9
1967	673.4	2,475	1,666.6	4.5	392.7
1968	829.7	2,570	2,132.6	60.6	166.1
1969	883.2	2,781	2,455.9	11.7	43.3
1970	920.9	2,829	2,747.2	25.9	43.8
1971	935.8	2,689	2,516.0	17.1	57.7
1972	1,109.0	2,355	2,611.5	246.3	0.2
1973	1,184.6	2,760	3,269.8	13.6	0.6
1974	1,155.7	3,028	3,499.4	426.7	0.3
1975	1,445.1	2,855	4,125.8	835.1	0.2
1976	1,251.1	3,219	4,026.9	44.6	0.3
1977	1,413.4	3,060	4,325.0	714.5	(0)
1978	1,399.3	2,997	4,193.0	729.0	1.0
1979	1,162.2	3,437	3,708.0	1,265.0	0
1980	1,578.6	3,018	4,812.0	2,097.0	0

Note: (0) signifies less than 50 MT.

TABLE A.4 Barley Area, Yield, Production, and Trade

Year	Harvested Area (thousand hectares)	Yield (kg/hectare)	Production (TMT)	Imports (TMT)	Exports (TMT)
1960	240.0	752	180.4	56.8	0.2
1961	233.1	747	174.1	33.2	0.2
1962	192.6	784	151.1	34.1	0.2
1963	232.4	799	185.6	12.8	0.2
1964	211.7	806	170.6	39.1	0.3
1965	226.3	854	193.2	86.9	0.3
1966	240.8	914	220.1	34.2	0.3
1967	238.5	853	203.4	2.0	0.3
1968	251.8	1,003	252.7	3.9	0.4
1969	245.0	867	212.5	3.0	0.4
1970	224.1	1,060	237.6	4.2	0.5
1971	221.2	1,222	270.3	4.3	0.6
1972	217.4	1,426	310.1	4.8	20.3
1973	262.5	1,495	392.4	57.4	12.5
1974	173.4	1,444	250.4	123.5	1.4
1975	286.5	1,537	440.3	155.4	1.6
1976	363.5	1,511	549.2	4.6	3.0
1977	248.5	1,681	417.8	0.2	53.3
1978	296.4	1,705	505.3	83.0	(0)
1979	250.4	1,440	376.0	45.0	(0)
1980	329.4	1,851	610.0	174.0	0

Note: (0) signifies less than 50 MT.

TABLE A.5 Oat Area, Yield, Production, and Trade

Year	Harvested Area (thousand hectares)	Yield (kg/hectare)	Production (TMT)	Imports (TMT)	Exports (TMT)
1960	80.2	843	67.6	6.2	(0)
1961	84.5	809	68.4	4.6	0.1
1962	85.9	864	74.3	5.4	0.1
1963	90.8	868	78.8	3.8	0.9
1964	91.3	875	79.8	3.6	2.1
1965	36.6	546	20.0	12.2	0.2
1966	77.6	807	62.7	11.2	0
1967	53.6	903	48.4	2.9	(0)
1968	42.3	1,007	42.6	4.4	0
1969	37.9	769	29.1	7.0	0
1970	53.9	794	42.8	26.0	0
1971	54.8	475	26.0	13.7	0
1972	41.6	641	26.6	17.7	0
1973	46.5	848	39.4	4.0	0
1974	60.0	852	51.1	5.1	(0)
1975	59.4	1,473	87.5	8.3	0.1
1976	65.8	723	47.6	0.9	0
1977	68.1	1,796	122.4	0.4	0
1978	54.6	1,124	61.4	0.1	0
1979	53.8	928	49.9	0.1	0
1980	121.3	1,500	181.9	9.1	0

Note: (0) signifies less than 50 MT.

TABLE A.6 Soybean Area, Yield, Production, and Trade

Year	Harvested Area (thousand hectares)	Yield (kg/hectare)	Production (TMT)	Imports (TMT)	Exports (TMT)
1960	4.0	1,230	5.0	0.1	0
1961	9.9	1,985	19.7	0.4	0
1962	27.3	2,076	56.7	2.4	0
1963	27.4	2,051	56.3	0.9	0
1964	30.6	1,968	60.3	1.9	0
1965	27.4	2,107	57.9	2.9	0
1966	54.2	1,749	94.8	5.0	0
1967	69.9	1,875	131.0	5.3	0
1968	133.0	2,069	275.2	12.1	0
1969	163.2	1,757	286.7	15.6	0
1970	111.8	1,920	214.6	101.6	0
1971	128.9	1,985	255.9	68.3	0
1972	221.6	1,700	376.8	10.7	(0)
1973	311.9	1,877	585.9	42.4	(0)
1974	300.1	1,636	491.1	434.8	(0)
1975	344.5	1,738	598.7	22.0	0
1976	172.4	1,754	302.5	347.9	0
1977	314.3	1,642	516.3	525.1	0
1978	216.5	1,542	334.0	681.3	0
1979	380.8	1,844	719.0	577.8	0
1980	154.8	2,014	312.0	896.0	0

Note: (0) signifies less than 50 MT.

TABLE A.7 Safflower Area, Yield, Production, and Trade

Year	Harvested Area (thousand hectares)	Yield (kg/hectare)	Production (TMT)	Imports (TMT)	Exports (TMT)
1960	25.7	1,248	32.0	0	0
1961	32.9	1,260	41.4	0	0
1962	36.8	1,270	46.8	0	0
1963	36.3	1,298	47.2	0	0
1964	35.6	1,325	47.2	0	0
1965	58.8	2,354	79.6	0	(0)
1966	164.9	1,432	236.2	0	50.6
1967	100.3	1,486	149.0	0	21.8
1968	87.7	1,191	102.1	0	0
1969	144.8	1,443	208.9	0	0
1970	175.4	1,645	288.5	0	0
1971	264.9	1,550	410.7	0	0.3
1972	198.8	1,364	271.3	0	47.2
1973	198.0	1.506	298.2	0	12.7
1974	191.7	1,421	272.4	0	0
1975	363.1	1,466	532.3	0	5.8
1976	184.9	1,299	240.3	0	0.1
1977	403.7	1,284	518.4	0	(0)
1978	429.1	1,435	616.0	0	0
1979	522.7	1,202	619.0	0	0
1980	392.2	1,136	446.0	0	0

Note: (0) signifies less than 50 MT.

TABLE A.8 Cottonseed Area, Yield, Production, and Trade

Year	Harvested Area (thousand hectares)	Yield (kg/hectare	Production (TMT)	Imports (TMT)	Exports (TMT)
1960	899.1	876	787.5	3.5	(0)
1961	794.0	965	766.5	1.9	0.1
1962	787.0	1,048	824.8	1.6	0.1
1963	846.6	1,072	907.7	1.4	0.1
1964	808.7	1,152	932.2	1.1	0.1
1965	813.3	1,171	952.9	1.0	(0)
1966	695.4	1,233	857.7	0.7	0.1
1967	662.0	1,225	811.0	1.4	1.6
1968	705.3	1,369	966.0	0.8	0.2
1969	513.2	1,240	636.8	6.5	0.2
1970	411.2	1,332	547.5	32.4	(0)
1971	457.8	1,362	623.5	28.7	(0)
1972	523.4	1,280	669.8	0.2	0
1973	425.1	1,401	595.5	0.3	0
1974	578.3	1,429	826.4	35.3	0
1975	226.8	1,413	320.3	0.5	0
1976	235.0	1,485	348.9	108.1	0
1977	419.6	1,570	658.7	40.3	0
1978	349.8	1,646	575.8	44.7	0
1979	373.1	1,462	545.0	2.1	2.0
1980	372.3	1,445	538.0	149.0	0

Note: (0) signifies less than 50 MT.

TABLE A.9 Copra Area, Yield, Production, and Trade

Year	Harvested Area (thousand hectares)	Yield (kg/hectare)	Production (TMT)	Imports (TMT)	Exports (TMT)
1960	73.9	2,436	180.0	0	0
1961	79.9	2,488	198.8	0	0
1962	81.0	2,517	203.9	0	0
1963	81.0	2,035	164.8	0	22.8
1964	80.3	2,117	170.0	0	7.3
1965	84.5	2,142	181.0	0	0
1966	86.2	2,340	201.7	0	0
1967	86.4	2,137	184.6	0	0
1968	89.8	2,183	196.0	0	0
1969	99.3	1,426	141.6	0	0
1970	113.6	1,268	144.4	0	0
1971	126.2	1,199	151.3	0	0
1972	129.9	1,128	146.5	0	0
1973	131.8	1,090	143.7	0	0
1974	138.1	1,025	141.5	0	0
1975	140.6	1,046	147.0	0	(0)
1976	153.3	1,044	160.1	0	0.1
1977	153.1	1,037	158.8	0	0.1
1978	154.9	1,037	160.7	0	0.1
1979	151.3	860	130.1	0	0.8
1980	142.1	1,112	158.0	0	(0)

Note: (0) signifies less than 50 MT.

TABLE A.10 Sesame Area, Yield, Production, and Trade

Year	Harvested Area (thousand hectares)	Yield (kg/hectare)	Production (TMT)	Imports (TMT)	Exports (TMT)
1960	203.1	636	129.2	(0)	0
1961	216.7	678	146.8	(0)	0
1962	238.3	662	157.8	(0)	1.9
1963	250.7	675	169.3	(0)	22.7
1964	261.3	657	171.7	0	1.7
1965	267.2	678	154.4	0	0.4
1966	252.1	661	166.7	(0)	3.0
1967	270.8	574	155.3	0.1	22.0
1968	259.0	614	159.1	0.5	2.2
1969	264.1	663	175.0	0.8	2.9
1970	273.8	655	179.4	0.8	3.6
1971	281.2	641	180.3	0	5.8
1972	276.5	581	160.6	(0)	23.3
1973	255.2	698	178.2	(0)	17.1
1974	240.3	665	159.9	(0)	6.9
1975	218.7	506	110.7	0	12.0
1976	198.0	428	84.8	0	20.3
1977	204.7	592	121.3	0	13.6
1978	243.9	549	133.9	0	35.5
1979	307.2	449	173.0	0	106.2
1980	282.3	622	176.0	0	52.3

Note: (0) signifies less than 50 MT

TABLE A.11 Linseed Area, Yield, Production, and Trade

Year	Harvested Area (thousand hectares)	Yield (kg/hectare)	Production (TMT)	Imports (TMT)	Exports (TMT)
1960	20.5	747	15.3	0.1	0
1961	20.1	744	15.0	0	0
1962	19.0	787	15.0	0	0
1963	18.0	761	13.7	(0)	0
1964	17.8	793	14.1	0.1	0
1965	18.1	918	16.7	0.3	0
1966	18.5	940	17.4	(0)	0
1967	15.7	922	14.5	0	0
1968	14.8	798	11.8	0.1	0
1969	11.4	1,078	12.3	0.6	0
1970	26.9	1,496	40.3	0.4	(0)
1971	26.8	1,505	40.4	(0)	0
1972	6.8	1,491	10.2	0	0
1973	9.8	1,532	15.1	0	0
1974	4.9	1,397	6.8	(0)	0
1975	16.0	1,709	27.3	0	0
1976	8.4	1,584	13.3	0	0
1977	12.2	1,632	20.0	0	0
1978	8.6	1,087	9.4	0	0
1979	7.1	848	6.0	0	0
1980	7.0	906	6.4	17.0	0

Note: (0) signifies less than 50 MT.

TABLE A.12 Palm Kernal Area, Yield, Production, and Trade

Year	Harvested Area (thousand hectares)	Yield (kg/hectare)	Production (TMT)	Imports (TMT)	Exports (TMT)
1960	19.0	1,159	22.0	0	0
1961	19.4	1,303	25.3	0	0
1962	22.2	1,320	29.3	0	0
1963	19.7	1,194	23.6	0	0
1964	20.9	1,230	25.7	0	0
1965	20.9	1,238	25.9	0	0
1966	21.0	1,243	26.1	0	0
1967	18.7	1,241	23.2	0	0
1968	20.5	1,232	25.3	0	0
1969	17.5	1,064	18.6	0	0
1970	13.2	1,062	14.9	0	0
1971	10.9	1,368	14.0	0	0
1972	12.8	868	11.1	0	0.1
1973	13.4	978	13.1	0	(0)
1974	13.8	993	13.7	0	0
1975	7.7	1,346	10.4	0	0
1976	12.3	1,216	14.9	0	0
1977	6.2	2,218	13.9	0	0
1978	4.1	2,073	8.4	0	0
1979	3.6	2,077	7.5	0	0
1980	4.6	1,849	8.4	0	0

Note: (0) signifies less than 50 MT.

TABLE A.13 Apparent Food/Feed Grain Consumption by Type of Grain in TMT

Year	Corn	Wheat	Grain Sorghum	Barley	Oats	Total
1961	5,453.8	1,409.3	240.6	213.5	72.1	7,389.3
1962	6,260.2	1,481.1	349.3	208.1	73.7	8,372.4
1963	6,812.8	1,676.5	433.7	163.7	77.1	9,163.8
1964	6,633.9	1,689.1	423.1	224.4	80.3	9,050.8
1965	7,118.9	1,477.9	559.4	257.2	91.9	9,505.3
1966	8,089.0	1,600.7	735.0	227.1	31.1	10,682.9
1967	8,022.6	1,844.5	1,022.8	221.8	65.5	11,177.2
1968	7,712.2	2,079.3	1,561.2	206.9	52.8	11,612.4
1969	8,281.2	2,073.9	2,101.1	255.4	49.6	12,761.2
1970	9,170.1	2,635.9	2,438.1	216.2	55.2	14,515.5
1971	8,623.3	1,922.2	2,706.6	241.3	56.5	13,549.9
1972	9,564.1	2,433.6	2,762.1	254.8	43.7	15,058.3
1973	10,336.4	2,798.0	2,624.5	355.0	30.7	16,144.6
1974	9,889.7	3,745.1	3,696.2	514.4	44.5	17,889.9
1975	10,502.3	2,841.7	4,334.2	404.2	59.4	18,141.8
1976	9,358.3	3,347.6	4,170.1	441.8	88.4	17,406.2
1977	10,001.5	2,886.7	4,741.4	496.1	48.0	18,173.7
1978	11,479.2	3,221.7	5,053.0	500.8	122.5	20,377.2
1979	11,673.1	4,220.0	5,458.0	550.3	61.5	21,962.9
1980	12,101.0	3,563.0	5,805.0	550.0	59.0	22,078.0

TABLE A.14 Apparent Oilseed Consumption by Type of Oilseed in TMT

Year	Soybean	Safflower	Cottonseed	Copra	Sesame	Linseed	Sunflower	Palm Kernal	Total
1961	5.4	41.4	789.3	180.0	129.2	15.3	0	22.0	1,182.6
1962	22.1	46.8	768.0	198.8	145.0	15.0	0	25.3	1,221.0
1963	57.6	47.2	826.1	181.1	135.1	15.0	0	29.3	1,291.4
1964	58.2	47.2	908.6	157.5	167.6	13.8	0	23.6	1,376.5
1965	63.1	79.6	933.2	170.0	171.3	14.4	0	25.7	1,457.3
1966	62.9	185.6	953.4	181.0	151.4	16.7	0	25.9	1,576.9
1967	100.2	127.2	857.5	201.7	144.7	17.4	0	26.1	1,474.8
1968	143.2	102.1	811.5	184.6	153.6	14.5	0	23.2	1,432.7
1969	290.7	208.9	972.3	196.0	156.2	12.4	0	25.3	1,861.8
1970	388.3	288.5	669.2	141.6	172.2	12.7	0	18.6	1,691.1
1971	282.9	410.5	576.2	144.4	173.6	40.3	0	14.0	1,641.9
1972	266.6	223.9	623.7	151.3	157.0	40.4	26.9	14.9	1,504.7
1973	419.2	285.5	670.1	146.5	143.5	10.2	15.1	11.1	1,701.2
1974	1,020.6	272.4	630.8	143.7	171.3	15.1	4.2	13.1	2,271.2
1975	513.1	526.5	826.8	141.5	147.9	6.8	3.7	13.7	2,180.0
1976	946.6	240.3	428.4	147.0	90.4	27.3	2.0	10.4	1,892.4
1977	827.6	518.4	389.2	160.0	71.2	13.3	1.9	14.9	1,996.5
1978	1,197.6	616.0	703.4	158.8	85.8	20.0	229.0	13.9	3,024.5
1979	911.8	619.0	575.9	159.9	27.7	9.4	167.6	8.4	2,479.7
1980	1,615.0	446.0	694.0	130.1	120.7	23.0	302.8	7.5	3,339.1

TABLE A.15 Apparent Oilseed Meal Consumption by Type of Oilseed in TMT

Year	Soybean	Safflower	Cottonseed	Copra	Sesame	Linseed	Sunflower	Palm Kernal	Total
1961	4.4	24.8	254.9	64.8	60.7	7.6	0	7.9	425.1
1962	16.3	28.1	253.0	71.6	68.1	8.7	0	9.1	454.9
1963	41.6	28.3	302.2	65.2	63.1	8.7	0	10.5	519.6
1964	42.2	28.3	318.4	56.7	78.7	8.0	0	8.5	540.8
1965	46.0	47.8	340.1	61.2	80.5	8.4	0	9.3	593.3
1966	45.3	111.4	368.9	65.2	71.2	9.7	0	9.3	681.0
1967	83.1	76.3	343.3	72.7	68.0	10.1	0	9.4	662.9
1968	103.8	61.3	344.8	66.5	72.2	8.4	0	8.3	665.3
1969	158.5	124.0	428.7	70.6	73.4	7.2	0	9.1	871.5
1970	283.2	166.0	304.5	51.0	80.9	7.4	0	6.7	899.7
1971	236.3	237.7	262.2	52.0	81.6	23.4	0	5.0	898.2
1972	215.7	119.3	280.4	54.5	73.8	23.4	15.3	5.4	787.8
1973	331.9	163.4	304.9	52.8	67.4	5.9	8.6	4.0	938.9
1974	756.2	163.5	287.0	51.7	80.5	8.8	2.4	4.7	1,354.8
1975	383.0	315.0	376.2	50.9	69.5	4.0	2.1	4.9	1,205.6
1976	692.7	139.0	194.9	52.9	42.5	15.8	1.1	3.7	1,142.6
1977	655.2	311.1	177.1	57.6	32.4	7.7	1.1	5.4	1,247.6
1978	951.6	369.6	324.0	57.2	40.3	11.6	130.5	5.0	1,889.8
1979	747.0	371.4	263.3	57.6	13.0	5.4	95.5	3.0	1,556.2
1980	1,364.6	267.6	363.8	46.8	56.7	13.3	172.4	2.7	2,288.1

TABLE A.16 Domestic Oilseed Meal Production by Type of Oilseed in TMT

Year	Soybean	Safflower	Cottonseed	Copra	Sesame	Linseed	Sunflower	Palm Kernal	Total
1961	3.9	24.8	359.1	64.8	60.7	8.9	0	7.9	530.1
1962	15.9	28.1	349.5	71.6	68.1	8.7	0	9.1	551.0
1963	41.5	28.3	375.9	65.2	63.5	8.7	0	10.5	539.6
1964	41.9	28.3	413.4	56.7	78.8	8.0	0	8.5	635.6
1965	45.5	47.8	424.6	61.2	80.5	8.4	0	9.3	677.3
1966	45.3	111.4	433.8	65.2	71.2	9.7	0	9.3	745.9
1967	72.1	76.3	390.2	72.6	68.0	10.1	0	9.4	698.7
1968	103.1	61.3	369.2	66.5	72.2	8.4	0	8.3	689.0
1969	209.3	125.3	442.4	70.6	73.4	7.2	0	9.1	937.3
1970	279.6	173.1	304.5	51.0	80.9	7.4	0	6.7	903.2
1971	203.7	246.3	262.2	52.0	81.6	23.4	0	5.0	874.2
1972	191.9	134.3	283.8	54.5	73.8	23.4	15.3	5.4	782.4
1973	301.8	171.3	304.9	52.8	67.4	5.9	8.6	4.0	916.7
1974	734.9	163.5	287.0	51.7	80.5	8.8	2.4	4.7	1,333.5
1975	369.4	315.9	376.2	50.9	69.5	4.0	2.1	4.9	1,192.9
1976	681.5	144.2	194.9	52.9	42.5	15.8	1.1	3.7	1,136.6
1977	595.9	311.1	177.1	57.6	33.5	7.7	1.1	5.4	1,189.4
1978	862.3	369.6	320.1	57.2	40.3	11.6	130.5	5.0	1,796.6
1979	656.5	371.4	262.0	57.6	13.0	5.4	95.5	3.0	1,464.4
1980	1,162.8	267.6	315.8	46.8	56.7	13.3	172.6	2.7	2,038.3

TABLE A.17 Rural Producer Price and CONASUPO Guaranteed Price for Corn, Wheat, Grain Sorghum, Barley, and Oats in Pesos

Year	Corn		Wheat		Grain Sorghum		Barley		Oats	
	Rural Producer Price	CONASUPO Guaranteed Price	Rural Producer Price	CONASUPO Guaranteed Price	Rural Producer Price	CONASUPO Guaranteed Price	Rural Producer Price	CONASUPO Guaranteed Price	Rural Producer Price	CONASUPO Guaranteed Price
1960	729	800	868	913	636	0	714	0	929	0
1961	749	800	912	913	564	525	748	0	991	0
1962	762	800	893	913	558	550	671	0	814	0
1963	942	940	915	913	584	565	712	0	865	0
1964	945	940	936	913	601	560	742	0	906	0
1965	959	940	944	913	632	625	793	0	949	0
1966	918	940	882	913	639	625	806	0	863	0
1967	940	940	849	913	620	625	818	0	884	0
1968	934	940	857	913	622	625	847	0	916	0
1969	894	940	849	913	639	625	862	0	891	0
1970	905	940	842	800	646	625	838	0	903	0
1971	900	940	861	800	681	625	841	950	906	0
1972	902	940	852	800	736	625	881	950	888	0
1973	1,109	1,200	890	870	848	725	1,008	1,200	1,089	0
1974	1,463	1,500	1,344	1,300	1,268	950	1,246	1,200	1,464	0
1975	1,863	1,900	1,724	1,750	1,574	1,420	1,576	1,450	1,811	0
1976	2,167	1,900	1,739	1,750	1,660	1,600	1,767	1,740	2,487	0
1977	2,837	2,900	2,127	2,050	1,998	2,030	2,080	2,030	2,964	0
1978	2,912	2,900	2,605	2,600	2,246	2,030	2,582	2,030	3,325	0
1979	3,550	3,480	3,000	3,000	2,520	2,335	3,230	2,030	3,200	0
1980	4,791	4,450	3,550	3,550	3,485	2,900	3,782	--a/	3,500	0

a/ Not available.

TABLE A.18 Rural Producer Price and CONASUPO Guaranteed Price for Soybeans, Safflower, Copra, Sesame, Cottonseed, Linseed, and Palm Kernal in Pesos[a/]

Year	Soybean		Safflower		Copra		Sesame		Cotton-seed	Linseed	Palm Kernal
	Rural Producer Price	CONASUPO Guaranteed Price	Rural Producer Price	CONASUPO Guaranteed Price	Rural Producer Price	CONASUPO Guaranteed Price	Rural Producer Price	CONASUPO Guaranteed Price	Rural Producer Price	Rural Producer Price	Rural Producer Price
1960	1,210	0	1,245	NA	1,878	0	1,915	0	731	1,574	1,612
1961	1,272	0	1,315	NA	2,163	0	2,015	0	852	1,632	1,924
1962	1,302	0	1,269	NA	2,038	0	1,982	0	811	1,738	1,973
1963	1,371	0	1,308	NA	2,249	0	2,037	0	842	1,882	1,986
1964	1,392	0	1,379	NA	2,286	0	2,068	0	857	1,902	2,012
1965	1,409	0	1,369	1,500	2,285	0	2,090	0	867	1,916	2,049
1966	1,427	1,600	1,390	1,500	2,299	0	2,101	2,500	873	1,936	2,064
1967	1,601	1,600	1,460	1,500	2,333	0	2,455	2,500	880	1,851	2,015
1968	1,599	1,600	1,478	1,500	2,365	0	2,456	2,500	904	1,898	2,030
1969	1,599	1,450	1,504	1,500	2,372	0	2,517	2,500	999	2,007	2,148
1970	1,635	1,300	1,542	1,500	2,405	0	2,515	2,500	1,141	1,857	2,318
1971	1,658	1,600	1,555	1,500	2,452	0	2,585	2,500	1,210	1,870	2,463
1972	1,793	1,600	1,575	1,500	2,732	0	2,807	3,000	1,118	1,888	2,482
1973	3,030	3,000	1,896	1,600	3,704	0	3,568	3,000	1,875	2,290	2,850
1974	3,297	3,300	3,748	3,000	5,187	0	5,490	5,000	2,188	3,452	3,393
1975	3,350	3,500	3,365	3,500	5,299	5,500	5,711	6,000	2,364	4,777	3,753
1976	4,151	4,000	3,650	3,200	5,783	6,050	6,421	6,600	2,990	5,490	4,488
1977	5,212	5,500	4,186	3,900	7,367	6,050	8,168	7,540	3,230	5,703	3,179
1978	5,727	5,500	5,647	4,600	7,367	6,050	10,805	7,540	3,338	5,747	5,234
1979	5,970	6,400	5,650	5,000	9,612	--b/	12,980	9,050	3,770	5,890	5,374
1980	7,404	8,000	7,200	6,000	10,500	11,500	11,210	11,500	4,800	5,950	6,020

a/ CONASUPO did not guarantee prices for cottonseed, linseed, and palm kernal through 1980.
b/ Not available.

TABLE A.19 CONASUPO Purchases and Sales of Corn, Wheat, Grain Sorghum, Barley, and Oats in Pesos

Year	Corn		Wheat		Grain Sorghum		Barley		Oats	
	Purchases	Sales	Purchases	Sales	Purchases	Sales	Purchases	Sales	Purchases	Sales
1960	0	0	0	0	0	0	0	0	0	0
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0
1965	1,861.0	707.0	1,459.3	1,094.3	0	1.2	0	0	0	0
1966	1,811.8	672.7	859.0	949.0	210.1	12.3	0	0	0	0
1967	1,911.4	822.5	1,100.8	974.6	377.4	63.1	0	0	0	0
1968	1,777.9	896.6	826.2	830.1	274.6	168.4	0	0	0	0
1969	1,463.1	1,066.0	1,195.0	897.7	115.8	48.0	0	0	0	0
1970	1,194.2	1,375.3	1,147.8	1,090.8	189.8	106.7	0	0	0	0
1971	1,535.7	1,317.5	682.0	929.4	(0)	85.2	0	0	0	0
1972	1,437.6	1,500.8	634.7	1,243.9	6.4	221.8	34.7	15.7	0	0
1973	804.4	1,797.4	922.3	1,538.0	31.7	25.3	4.8	54.5	0	0
1974	779.3	2,158.5	725.6	1,761.1	35.4	323.9	1.2	84.2	0	0
1975	345.0	2,635.2	1,066.3	988.7	333.5	804.2	(0)	2.5	0	0
1976	968.1	2,173.5	1,492.8	833.9	482.6	732.7	56.7	0.2	0	0
1977	1,430.4	2,786.0	478.9	1,586.6	655.6	925.9	1.6	4.2	0	0
1978	1,808.8	3,191.7	1,205.0	1,192.0	571.2	1,987.2	(0)	4.7	0	0
1979	1,952.1	3,166.6	785.0	1,929.7	697.6	2,030.1	0	0.2	0	0

Note: (0) signifies less than 50 MT.

TABLE A.20 CONASUPO Purchases and Sales of Soybeans, Safflower, and Sesame in TMT[a/]

Year	Soybeans		Safflower		Sesame	
	Purchases	Sales	Purchases	Sales	Purchases	Sales
1960	0	0	0	0	0	0
1961	0	0	0	0	0	0
1962	0	0	0	0	0	0
1963	0	0	0	0	0	0
1964	0	0	0	0	0	0
1965	0	0	0	0	0	0
1966	0.2	0	113.1	0	8.9	0
1967	0.2	0	84.6	66.5	12.2	0
1968	95.8	0	0	1.9	14.7	6.9
1969	34.9	7.0	(0)	0	2.6	0
1970	0	0.2	0	0	0	0
1971	0	1.3	42.5	3.5	0	0
1972	0.1	0	99.4	72.9	0	0
1973	0	17.1	0	4.4	0.2	0.2
1974	81.0	227.8	0	0	0	0
1975	160.6	261.1	432.2	49.3	31.1	0
1976	0.3	526.8	4.0	375.0	18.7	33.6
1977	1.7	271.9	(0)	9.3	1.9	20.0
1978	0.1	812.8	0	0	(0)	0.5
1979	3.1	489.6	70.6	0	0	(0)

Note: (0) signifies less than 50 MT.

a/ CONASUPO did not purchase or sell cottonseed, copra, linseed, and palm kernal through 1980.

TABLE A.21 Oilseed Meal Imports and Exports by Type of Oilseed in TMT[a/]

Year	Soybean		Cottonseed		Safflower	Copra	Sesame	Linseed
	Imports	Exports	Imports	Exports	Exports	Exports	Exports	Exports
1960	0.5	0	0	58.7	0	(0)	(0)	1.0
1961	0.5	0	0	104.3	0	0	(0)	1.2
1962	0.4	0	0	96.4	0	0	(0)	0
1963	0.1	0	0	73.7	0	0	0.4	(0)
1964	0.3	0	0	95.1	0	(0)	0.1	0
1965	0.6	0	0	84.5	0	0	0	0
1966	(0)	0	0	64.9	0	0	0	0
1967	10.9	0	0	46.8	0	0	0	0
1968	0.7	0	0	24.5	0	0	0	0
1969	0.8	51.7	0	13.7	1.3	0	(0)	0
1970	3.6	0	0	(0)	7.1	0	0	0
1971	32.6	0	0	0	8.6	0	0	0
1972	23.8	0	0	3.4	15.0	0	(0)	0
1973	30.1	0	0	0	7.9	0	0	0
1974	21.3	0	0	0	0	0	0	0
1975	13.5	(0)	0	0	0.9	0	0	0
1976	11.1	(0)	0	0	5.2	0	0	0
1977	59.3	0	0	0	0	0	1.0	0
1978	89.3	(0)	3.9	0	0	0	0	0
1979	90.5	0	1.3	0	0	0	0	0
1980	201.8	0	48.0	0	0	0	0	0

Note: (0) signifies less than 50 MT.

a/ Mexico did not import safflower, cottonseed, copra, sesame, and linseed meal, and no amount of palm kernal meal was imported or exported through 1980.

FOOTNOTES

1/ The CONASUPO base price, discussed here and elsewhere, is the CONASUPO resale price.

Subsidies on agricultural products are massive. According to President Lopez Portillo (in his sixth address), government subsidies on corn (for tortillas) and wheat (for bread--bolillos and teleras) totaled 23.0 billion and 12.3 billion pesos, respectively, in 1982.

2/ On 26 March 1979, Mexico tendered for the purchase of 110,000 MT of grain sorghum (Embassy 1981).

3/ On both the supply and demand for oilseed and oilseed meals.

4/ The government of Mexico issued import permits for 50,000 MT of cottonseed meal for regional cattle associations in northern Mexico in 1980 (Embassy 1981).

5/ Major food and/or feed grains considered in this study include grain sorghum, corn, wheat, barley, and oats. Rice is not included. No reliable official Mexican time series on grain stocks are available. Therefore, five-year averages are taken to minimize the effects of changes in stocks on consumption levels. Hence, consumption (apparent) in the year t is simply domestic production in year t minus one, except for wheat which is in year t plus net imports in year t (see appendix). Stock figures are estimated and published by the USDA/FAS.

6/ No extended time series estimates are available from Mexican sources on the amount of grain that is used for feed. Hence, the USDA/FAS estimates of feed usage, although not strictly comparable to the Mexican data, are used in this analysis. The only major exception is the amount of corn utilized as feed.

The USDA/FAS reported Mexico's corn feed utilization at 0.3% of total apparent consumption throughout the 1960s. However, this percentage appears to severely underestimate the actual amount of corn that went to feed. During 1960, for example, the Mexican Secretary of Agriculture and Livestock, Bureau of Agricultural Economics, placed Mexico's corn feed utilization at 18.5% of domestic consumption, or a total of 1,170 TMT (SAG et al., p. 175).

Similarly, a government publication (Presidencia, p. 43), quoting CONASUPO, placed 1979 domestic corn production at 8,572 TMT, imports at 828 TMT, for a total apparent consumption of 9,400 TMT (not compatible with authors' apparent consumption). Fully 31% of total apparent consumption, or 2,914 TMT, was estimated to be consumed directly (consumo directo). Of this quantity, 1,680 TMT (or 17.9% of total apparent consumption) was estimated to be for animal feed (forrajes de productores). However, USDA/FAS reported corn feed utilization at from 2.6% to 9.4% of total corn consumption during the 1970s. Again, this could well underestimate (although not as severely) the amount of corn used for feed.

To present a more accurate approximation of corn utilization attempts were made to estimate human corn consumption (using a base period human consumption and income elasticity of demand for corn) and then take consumption minus human consumption to derive nonhuman consumption (which would include feed, seed, etc.). However, the estimations of income elasticity of corn found in the literature are consistently negative. Because the reported rate of growth of incomes over the 1960-80 period is greater than the population growth rate, using this approach suggests (other things being equal) that per capita human corn consumption declined significantly over the period. This, given recorded corn production and import levels, yields substantial quantities of corn utilized for nonhuman consumption (and, hence, for feed). One explanation for this outcome could be that since corn product prices are under strict controls, and are made available at subsidized rates, the price effect could be distorting the income effect; or, possibly, the amount of corn utilized for feed is in fact a substantial amount. In any case, instead of attempting to derive an "other" grain consumption (that would include feed utilization) corn feed utilization is placed at a constant 15% of apparent consumption throughout the 1960-80 period (table 14).

7/ Laws were passed during the 1979/80 food/feed grain shortages that outlawed the use of corn as feed, except imported no. 3 yellow corn. Although some corn was undoubtedly utilized as feed, CONASUPO actively promoted the exchange of corn for grain sorghum.

8/ A law was passed in 1982 outlawing, in certain incidences, the use of wheat as feed.

9/ Actual Mexican imports exceeded the quantities stated in the CY 1980 agreement.

10/ The following oilseeds are used in the discussion: soybeans, safflower, cottonseed, copra, sesame, linseed, sunflower, and palm kernel. Peanuts are not included. Furthermore, as in the case in food/feed grain consumption, no reliable "official" Mexican time series on oilseed stocks are available. Five-year averages are taken to minimize the effects of changes in stocks. All consumption figures are, therefore, apparent consumption in year t, which is equal to production in year t minus one, except for safflower, plus net imports in year t (see appendix).

11/ These 1979/80 production levels are based on CANACINTRA estimations (CANACINTRA 1981A).

12/ The Mexican government administers an industrial census every five years.

13/ When referring to the National Section of Balanced Animal Feed Producers (SENAPABA), the CANACINTRA division that represents the organized animal feed industry, the acronym CANACINTRA will be utilized.

14/ These 80 feed plants include plants operated by ALBAMEX.

15/ Purina S.A. de C.V. plants also include plants of Purina Pacifico a division of Purina S.A. de C.V.

16/ Discussion on vertical integration of Anderson Clayton & Co. and Purina S.A. de C.V. is based on a Comercio Exterior article (Montes de Oca Lujan and Escudero Columna).

17/ The Mexican government places ALBAMEX's annual average feed production at 325.2 TMT in 1979/80 (Lopez Portillo 1981C, p. 651), while CANACINTRA reports total official sector feed production at an annual average 469.0 TMT (CANACINTRA 1981A, p. 4). This differential (between the two sources) could be accounted for by the production of ICONSA.

GLOSSARY

ALBAMEX (Alimentos Balanceados de Mexico, S.A.): CONASUPO Balanced Feeds, feed manufacturers.

ANDSA (Almacenes Nacional de Deposito, S.A.): CONASUPO storage facilities.

BANAMEX (Banco Nacional de Mexico): National Bank of Mexico.

BANRURAL (Banco Nacional de Credito Rural): National Bank of Rural Credit.

BORUCONSA (Bodegas Rurales de CONASUPO, S.A.): CONASUPO rural storage facilities.

CANACINTRA (Camara Nacional de la Industria de Transformacion): Mexican Chamber of Manufacturing Industries.

Coyotes: Marketing intermediaries who buy domestic oilseed and grain production.

CECONCA (Centros CONASUPO de Capacitacion): CONASUPO Training Centers.

CNG (Confederacion Nacional Ganadera): National Livestock Confederation.

CONASUPO (Compania Nacional de Subsistencias Populares, S.A.): National Company of Subsistence Commodities.

Ejido: land tenure system.

ICONSA (Industrias CONASUPO, S.A.): CONASUPO Industries, oilseed processing.

LICONSA (Leche Industrializada CONASUPO, S.A.): CONASUPO Industrialized Milk.

MICONSA (Maiz Industrializado CONASUPO, S.A.): CONASUPO Industrialized Corn.

SAM (Sistema Alimentario Mexicano): Mexican Food System.

SARH (Secretaria de Agricultura y Recursos Hidraulicos): Secretary of Agriculture and Water Resources.

SECOM (Secretaria de Comercio): Secretary of Commerce.

SPP (Secretaria de Programacion y Presupuesto): Secretary of Programming and Budget.

Subsecretaria de Regulacion y Abasto: Undersecretary for Regulation and Supply.

TRICONSA (Trigo Industrializado CONASUPO, S.A.): CONASUPO Industrialized Wheat.

UNA (Union Nacional de Agricultura): National Union of Poultrymen.

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