

PROCESSING

The Mexican Oil and Protein Meal Industry

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INTRODUCTION

The supply of nutrients is a serious and important matter. Although hunger and poor nutrition persist even in the developed countries, it is, in large measure, a problem found in the developing countries, many of which are not in a position to produce the food required by their rapidly growing populations. It is a worldwide problem that requires the coordinated efforts of those privileged to have an adequate agricultural infrastructure with those who need outside supplementation. This is why the industrial structure is so important for a developing nation like Mexico, allowing it to process its foodstuffs from its own agricultural inputs with the necessary international help.

The vegetable oil industry must fulfill its obligation to society by processing primary agricultural products and providing the products to fortify the diet of the population as a whole. Its principal products, oils, shortenings, fats and vegetable proteins, form a very important part of the human diet, and soybeans and other oilseeds are basic in their manufacture.

In Mexico, we have tried to see that the increase in consumer requirements, which is a natural consequence of population growth and social development, is protected by an adequate industrial installation, with the objective of ensuring the effective and timely supply of these products in the short, medium and long term. However, as in other countries, our agricultural production is insufficient and we depend on outside supplementation. To reduce this dependency, the Mexican government has begun a broad-scale agricultural program to which the vegetable oil sector also is contributing its efforts.

CONSUMPTION OF EDIBLE OILS AND FATS AND PROTEIN MEAL IN THE MEXICAN REPUBLIC

Edible oils and fats. The estimated consumption of edible oils and fats of vegetable origin for 1980-81 (April 1-March 31) is 11 kg/person, resulting in an annual demand of 781,000 tons. This figure is augmented by the use of edible fats of animal origin, such as pork and beef fats and fish oil, of which ca. 300,000 tons are consumed. Our total consumption of animal and vegetable oils and fats amounts to 1,081,000 tons, corresponding to 15 kg/capita, based on an estimated population of 71,000,000 inhabitants.

Based on a previous cycle, the rate of increase in consumption of vegetable oils and fats was estimated at 6%/year, but this has now increased because of the implementation of the government's social programs under our ambitious plan for development of the international petroleum market.

If our national development plans are fulfilled, our economy will double over the next 10 years, and this increase will have an immediate effect on the vegetable oil industry,

which will see similar increases in demand.

Protein meal: (a) soybean meal. Coinciding with the increasing international use of soybean meal for the preparation of animal feed and texturized pastes for human consumption, Mexico is using soybeans as a basic raw material. At present, the annual demand for soybean meal is estimated to be 1,100,000 tons, with an annual rate of increase of 10%.

In the case of vegetable oils, our country's economic growth foreshadows a change in the future rate of consumption of this product, which should be calculated on the basis of actual events. The use of soybean meal in the Mexican market is distributed as (%): poultry, 70; hogs, 20; and small species, 8.

The supply structure for the manufacture of texturized pastes for human foodstuffs is small as yet. Annual production of this item uses only 2% of the soybean meal produced. A big increase is foreseen in the use of this product, as it parallels the diet-improvement programs undertaken by both the Mexican federal government and the private sector.

(b) Other residual pastes. The consumption of the residual meals obtained by processing other oleaginous seeds is ensured, the use of each being determined by its intrinsic content. This is true with cottonseed meal, which is used in feed for ruminants and secondarily for poultry and hogs. Sesame seed meal is rich in amino acids, particularly methionine. Safflower is ideal for poultry feed, and sunflower meal, for which demand is growing in Mexico, is very attractive to animal feed manufacturers.

INDUSTRIAL CAPACITY

The vegetable oil industry is fully meeting its objective of supplying edible oils and fats of vegetable origin and for residual meals. To supply the country in the next few years, for which a combined production from domestic and imported materials of 3,800,000 tons is estimated, we have an installed industrial capacity of 87 plants with a theoretical annual milling capacity of 4,600,000 tons of oleaginous seeds. The milling capacity of our plants is flexible and may be used to process different raw materials.

Almost all the oil-producing facilities have systems suitable for, e.g., soybeans, sesame seeds, sunflower seeds, cottonseed, safflower and rapeseed. The plants are equipped with additional machinery that permits processing of any of these oilseeds, in the following approximate percentages: soybeans, 50.00; cottonseed, 16.60; safflower seeds, 16.60; sunflower seeds, 8.30; copra, 3.8; sesame seeds, 3.30; others, 1.4.

The industrial plants are located in 21 states of the Republic, particularly in the areas of consumption and agricultural production, such as the Mexico City metropolitan

area in the center of the country, in the West, with headquarters in the cities of Guadalajara and Morelia, in the North, in the city of Monterrey, N.L., in the agricultural regions of the states of Sonora, Sinaloa, Baja California Norte, and in the Laguna region; others are strategically located in areas of future agricultural development or of increased consumption, such as the States of Veracruz, Puebla, Guerrero, Tamaulipas, Michoacán and Yucatán.

The industrial integration of the plants reflects their locations. For example, the main refining capacity is found in the densely populated zones, and the mills are in present or future agricultural zones, also near seaports that permit easy access to foreign raw materials.

Considering the processing capacity, which is in a continuous state of expansion and modernization, preparations are now being made for coping with future growth to ensure production of oils, fats and meal. Unfortunately, this industrial capacity is unmatched by the supply of domestically produced raw materials and a 50% supplementation from outside is required.

IMPORTANCE OF THE INDUSTRY

The vegetable oil industry absorbs the entire harvest of oleaginous seeds, representing 8% of the total value of Mexican agricultural production. It is estimated to rank fifth among Mexican industries, and within the food industry, it is the most important group. Based on current prices of agricultural raw materials, it can be stated that this industry's total production is more than 55 billion pesos, or 2,391 billion dollars.

STRUCTURE OF THE INDUSTRY

The Mexican vegetable oil industry is structured as follows. (a) Integrated industries are those whose operations begin with the purchase of oilseeds and include processing and sale of the finished products. These companies make up the nucleus. They are self-sufficient in their processes; (b) semi-integrated industries have an industrial process, but require industrial supplementation to obtain their finished products; (c) mills producing raw oils process the raw materials and supply the market with raw oils that are used by others to manufacture finished products; (d) producers of finished products are those that do not have mills, but have the facilities for processing the raw oils into finished products.

The high level of competition in the industry forces it to reduce operating costs to a minimum and have efficient equipment with the best international technology. Now, 70% are modernized, and the products can withstand the most demanding comparison with similar products in the international sphere. This guarantees the consumer access to the best products obtainable.

STATE PARTICIPATION IN THE NATIONAL VEGETABLE OIL INDUSTRY

The Mexican government participates in the vegetable oil industry through a Federal Government agency known as the CONASUPO, National Company for Low-Cost Staples, whose main purpose is to regulate the market for our products, as well as to give protection to farmers in marketing their production of oilseeds by setting support prices that act as incentives. In addition, CONASUPO is the agency entrusted with applying import policies for oleaginous supplements. The oilseed industry purchases its raw materials directly in the international market under CONASUPO's supervision.

To meet its objectives, CONASUPO has installed a powerful industrial complex with plants located strategically throughout the country—an industry having a milling capacity of more than 1,500 tons/day; in finished products it has almost a 20% share of the domestic market. CONASUPO also distributes soybean meal among the poultry-producing organizations which cannot buy their own supplemental needs internationally.

The purpose of CONASUPO is to ensure a supply to underprivileged areas, and it can be said that its distribution is good. Private industry accepts its participation, provided that pre-established rules are followed, placing the government in operations strictly to provide support to society.

SOYBEAN PROCESSING BY THE MEXICAN VEGETABLE OIL INDUSTRY

The advent of the soybean has produced a radical change in the industry's use of raw materials. Industrialists have been changing their facilities to adapt them to the increased use of this legume. Previously, our industry processed cotton and sesame seeds and copra, which were ground in hydraulic machines with extraction by expeller. The market capacity and the related processing capacity were minimal in comparison to the current levels.

The use of the soybean and knowledge of its advantages have been factors in the accelerated adoption of advanced technologies, and the old machines have gradually been replaced until only a few vestiges of older installations remain.

Our industry includes 80% that is equipped for extraction with solvents, and the rest is expeller extraction. The expeller systems are used in some areas of the country, particularly for processing cotton and sesame seeds and copra.

The applications of soybean products are similar to those of the advanced nations. One outstanding use of protein meal is as basic nutrients in animal feeds. The oils derived from their processing have been well accepted in pure form and also when mixed with similar products. Soybean oils are used in making shortenings and margarines, as well.

Lecithin, which is a by-product of soybean processing, is produced in sufficient quantities in our country to supply the market. Likewise, the sophisticated production of texturized pastes for the manufacture of human foods has won strong preference.

Efforts have been made to ensure that technicians in the vegetable oil industry are kept up-to-date on the latest knowledge in the field. We try to apply modern information to industrial processes, using new methods such as refining, bleaching, deodorizing, hydrogenation and winterization.

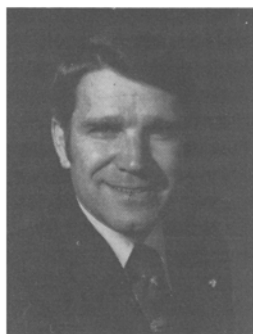
The equipment used for soybean processing comes from whatever source incorporates the most advanced techniques, thus our plants have U.S., English, Belgian, German, Italian and locally made machinery. Because of the strong competition in the refining sector, efforts have been made to purchase the most modern instruments, regardless of the country in which they are produced.

VEGETABLE OIL INDUSTRY'S PARTICIPATION IN MEXICAN BASIC COMMODITIES PROGRAM

The present federal administration has begun a program for the production of basic articles. Outstanding products are edible oils and fats of vegetable origin, a fundamental soybean contribution. This program is based on a joint effort

by the public and private sectors, called the Alliance for Production, and its purpose is to distribute nourishing food-stuffs to the remotest regions of our country. The Mexican vegetable oil industry's participation has been ample, and we feel that it is meritorious. All efforts made to achieve

this social objective, whether through increased agricultural production of soybeans or better industrial facilities to process them, find a justification in this program that compensates the risks and sacrifices in the oil-producing operation.



The Soybean Marketing Systems

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ABSTRACT

The movement of soybeans from producers to final users is a complex system involving numerous changes in ownership, form, time and space. Defining the market for soybeans is not a simple task nor is the marketing system easily delineated. The purpose of this paper is to outline the general movement of soybeans from harvest to final user including the various alternatives existent in the present system of marketing grains. An equally important objective is to point out that such a complex, worldwide system functions so effectively. The demand for protein and vegetable oil, so vital to world nutrition, is being largely met by a system of free market decisions. Certainly, governments have a hand in the markets in varying degrees, but by and large, soybeans are produced and moved based on the profit motive. Essential to the continuation of an effective world market is a recognition of the merits of the system that has enabled soybeans to be economically used in almost all parts of the world. This recognition will ensure continued success and perhaps help alleviate existing market inequities.

The soybean market is perceived differently, depending on the observer's position in the marketing chain. The term "market" is used to describe more than a single location or exchange process. It includes exchange, storage and transport at local production areas, regional processing points and export channels, in addition to trade in commodity futures and various other ancillary markets active during the total process. The market also includes similar operations for soybean meal and soy oil. The soybean market to an Illinois producer may simply be the local elevator and his hedge account in Chicago, whereas, for the Algerian animal feed producer, the market consists of a government agency and local customers. However, between these two participants exist numerous other soybean markets handling the same bushel of soybeans.

The options available for movement of a product to its end use are many and will depend on the type of company involved, the policies of participating governments, both exporting and importing, and methods of financing. The description of marketing entailed here represents the United States' practices. However, the mechanics of soybean movement are similar in other major producing and exporting countries, such as Brazil and Argentina, with varying degrees of government intervention.

The local soybean market begins with a decision to produce. This decision, generally oblivious to the final user,

involves a series of considerations which implicitly link the various components of the marketing system. The U.S. producer bases his decision to produce soybeans on expected dollar returns and land use planning. Land use planning involves questions of soil fertility, erosion and crop rotations, whereas the expected dollar return is largely based on expected price relationships.

Theoretically, price will ration crop acres by signaling to the producer which alternative will earn him the greatest return. These price signals result from world supply and demand conditions in which the final user plays an extremely important role. Comparative prices have led U.S. producers to plant over 70 million acres to a crop that only 15 years ago was half that total and was originally grown as a local hay crop. Price is the key to the marketing system when allowed to operate free of artificial constraints and remains the key force even in the face of governmental encumbrances.

Upon making this decision to plant soybeans, the producer involves not only himself, but sets in motion demand for numerous products that form the ancillary markets previously alluded to. These markets include machinery, seed, herbicides, insecticides, finance, fuel, storage and others that play an integral part in the traditional soybean market. Each of these markets involve intricate systems of transport, storage and world supply-demand conditions.

In the actual movement of soybeans in the marketing system, the producer has several options available during the time of crop development and his ownership of product. The producer can sell his expected crop on contract for delivery at harvest on any number of pricing schemes. He can hedge his production through the futures market. He can sell his crop at harvest for current prices. He can store his production on farm or at a rented facility and sell at a later date. Generally, the normal pattern would consist of a combination of these options, depending on the individual producer's knowledge, creativity or unique circumstances. The important factor in all these options is the price signal reflected to the producer, a price that is determined simultaneously by factors around the world. The local market in rural America certainly is not isolated from world supply and demand conditions.

Given the producer's decision to sell soybeans, there are,