

Special Article

Mexico's Pork Industry Structure Shifting to Large Operations in the 1990's

As part of a technical assistance project for emerging markets, USDA's Economic Research Service cooperated with Mexico's agriculture ministry, SAGAR, to develop a background study and outlook report on the Mexican pork industry. The study describes historical developments in technology use, farm structure, and slaughter infrastructure, and the outlook report examines critical factors such as disease control and market efficiency for the future of the industry in Mexico. Some of the information contained in the final project report, Situacion Actual y Perspectiva de la Produccion de Carne de Porcino en Mexico 1990-1998, are presented in this article.

Rapidly changing swine production technology, intensified disease control measures, increased foreign trade activity, and economic and policy shocks over the past quarter of a century have combined to produce marked change in the Mexican pork industry. As in the U.S. hog industry, swine production in Mexico began to change dramatically in the 1970's with development of technologically advanced farms that rapidly increased productivity. High productivity and growing demand vaulted pork to the lead in the Mexican meat supply, accounting for nearly half the meat produced in Mexico in 1983 and 1984.

Rapid growth in the early 1980's had been supported by government subsidizing of the cost of sorghum for feed use. Withdrawal of this support in 1984 led to a sharp rise in production costs. Combined with currency devaluation that contracted consumers' purchasing power, this led to a dramatic fall in demand for pork, sending the industry into a depression that lasted until the 1990's.

During this period, the hog industry underwent a second radical structural readjustment, which consolidated part of the industry and increased productivity beyond levels achieved in the early 1980's. Higher productivity and the capacity to utilize improved infrastructure built up in the 1980's enabled the industry to resume growth in the 1990's. Despite substantial progress, however, the industry's efficiency continues to be hampered by a complicated structure of multiple levels of marketing intermediaries and related commercial interests.



Milton Madison

Mexico's Pork Industry In the 1990's

Despite growth through increased productivity in the 1990's, pork production now accounts for only about a quarter of Mexico's meat production. A series of crises in the Mexican economy that led to currency devaluations during the 1980's and 1990's caused the purchasing power of Mexican consumers to deteriorate. Pork demand dropped as lower priced meat and non-meat products were substituted for fresh pork and for processed pork in cold cuts and sausages. Substitution of poultry meat in processed meat products is due not only to price considerations but also to a growing preference among Mexican consumers for products with lower fat content.

Mexico's markets opened to imported hogs, pork products, and poultry products in the 1990's, increasing competition for domestic pork producers, but the Mexican pork-packing industry was still able to grow more than 6 percent per year. When increased production led to extremely low prices in the U.S. in 1998 and 1999, liberalized import markets and increased packing capacity developed earlier in the decade in Mexico allowed U.S. pork producers to find alternative markets for their products through increased exports of live hogs and pork products to Mexico. Currently, Mexico is the largest foreign market for U.S. live hogs and the second largest for U.S. pork products.

In response to increased pork imports and weakening demand that have combined to press the Mexican pork industry, the

sector is experiencing structural change. As of the early 1990's, 99 percent of Mexico's 1.9 million hog farms had fewer than 20 animals. But these small operations accounted for only 52 percent of the country's swine inventory. Larger operations, accounting for only 1 percent of hog farms, held the remaining 48 percent of Mexico's hogs.

Although pork is produced throughout Mexico, five states—Jalisco, Sonora, Chiapas, Veracruz, and Yucatan—account for nearly half of Mexico's swine inventory. Easy access to large domestic and export markets has led to a concentration of the largest operations in a few states. Six states—Jalisco, Sonora, Guanajuato, Puebla, Yucatan, and Michoacan—now account for nearly 75 percent of domestic pork production. Chiapas and Veracruz, though among the top states in swine inventory, are not among the top states in pork production because of the predominance of low-productivity production systems among their producers.

As has happened in the U.S., swine production is becoming established in some nontraditional areas. In Mexico, the movement has been to Tamaulipas, Nuevo Leon, Quintana Roo, and Hidalgo, primarily because disease control has been improved enough in those areas to allow pork production.

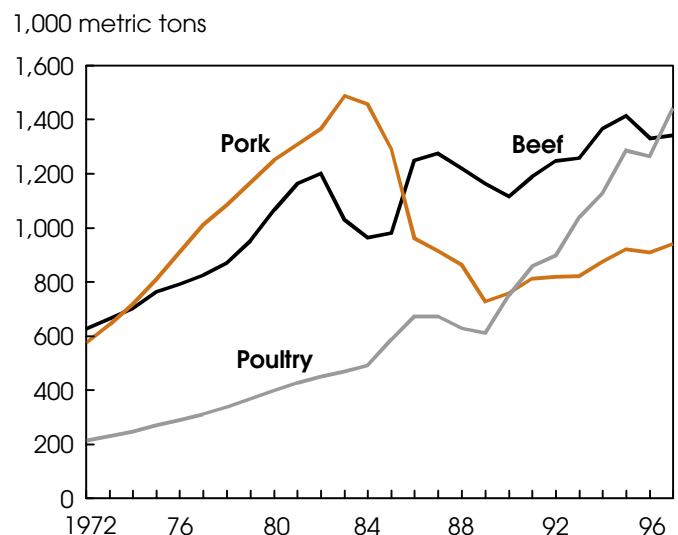
Because hog production is generally located far from population centers, about 54 percent of hogs must be shipped across state lines for slaughter. The biggest markets are municipalities in the Mexico City area in the state of Mexico—2.3 million head, or 53 percent of the swine shipped across state lines in 1996, were slaughtered in the Mexico City area. The largest number of hogs shipped for slaughter, 1.6 million, came from Jalisco; Sonora, Guanajuato, and Michoacan shipped just under 600,000 head each. Together these four states accounted for 78 percent of interstate swine movements in 1996.

A Three-Tiered Industry

The Mexican pork industry operates under three basic production systems, separated by technological advancement and level of vertical integration and associated with distinct geographic locations. These systems may be identified as technologically advanced production, small commercial production, and traditional backyard production. Both technologically advanced operations and small commercial producers have developed in well-defined geographic locations, while traditional backyard production is found throughout the country.

Technologically advanced production systems are state-of-the-art operations with a high level of vertical and horizontal coordination, similar to most advanced hog producing systems in the world today. Technologically advanced operations now account for about half of Mexico's pork production. These operations are concentrated in the Mexican states of Sonora and Sinaloa, but large hog companies have also acquired or begun operations in areas that have not traditionally produced swine. Thus, technologically advanced operations can also be found in the states of Mexico, Nuevo Leon, Queretaro, Puebla, Tamaulipas, Veracruz,

Mexican Pork Production Rises in the 1990's, But Trails Beef and Poultry



Source: Mexican Agricultural Secretariat (SAGAR).
Economic Research Service, USDA

and Yucatan, as well as a few in the Laguna Region in the states of Durango and Coahuila.

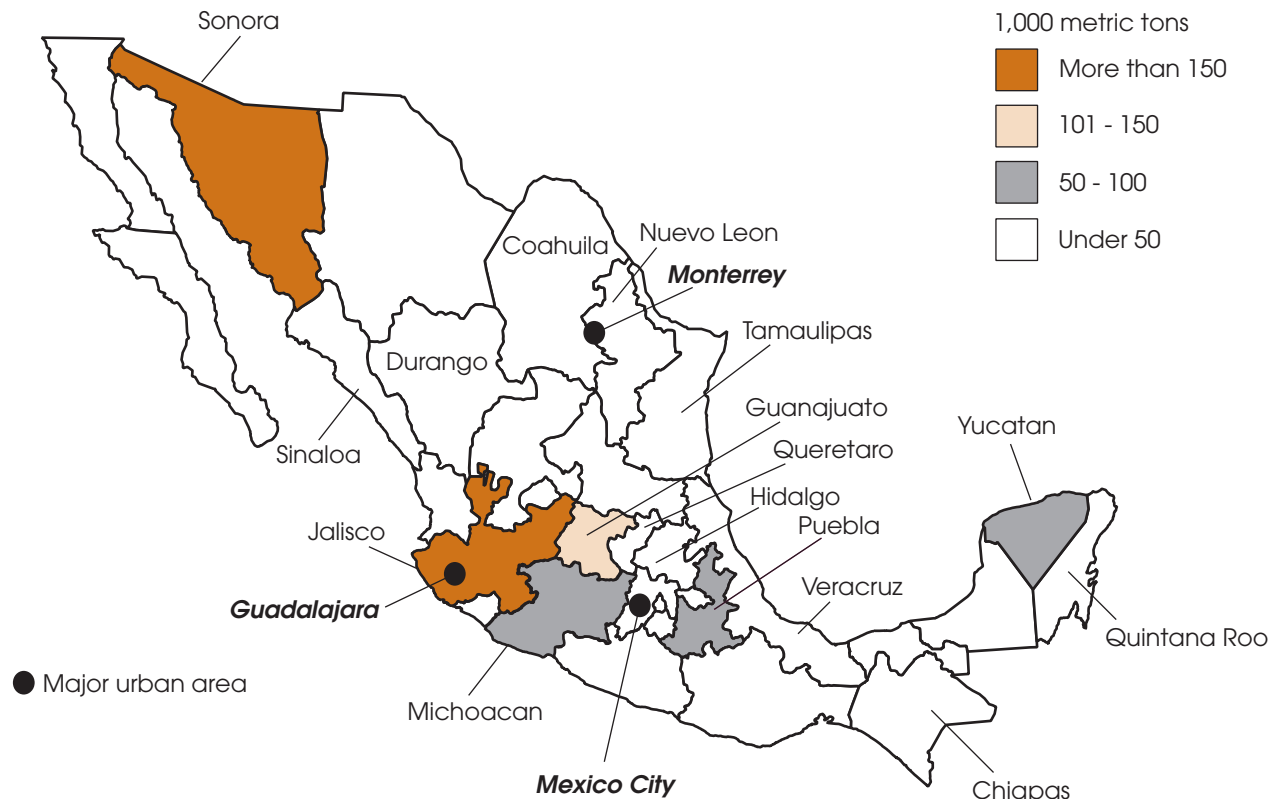
Coordination of production from breeding through finishing ensures a standardized quality of animals for slaughter. These operations manufacture their own feed in order to customize rations for the genetic characteristics and production stage of the animals. Technologically advanced production systems also increase productivity through meticulous sanitation and biosecurity measures to control potentially costly disease problems by preventing the introduction of disease into production facilities. The Mexican states that are being declared free of classical swine fever and other damaging illnesses tend to be the states where these technologically advanced operations predominate.

Technologically advanced operations may own their own slaughterhouses, or may share ownership with an association of similar operations. Vertically integrated slaughter plants are likely to be Federal Inspection Model (TIF—*Tipo Inspección Federal*) plants, which are state of the art. TIF slaughter plants were created in 1947 to allow continued exports to the U.S. after an outbreak of foot-and-mouth disease in Mexico. Currently, only pork slaughtered in TIF plants can be exported, and then only after certification by the importing country. Mexico's 33 TIF plants slaughtered 3.7 million head in 1997, 31 percent of total hog slaughter in Mexico. The government has set up temporary assistance programs in the past to channel resources to producers who have their hogs slaughtered in TIF plants.

Further vertical integration is targeting cutting rooms and lard rendering operations, which bring the whole processing operation under company or association control and thereby capture all of the value-added profits. Thus technologically advanced producers can provide consistent, high-quality products

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Mexico's Pork Production Is Concentrated in Six States



1997 production.

Source: Agricultural Statistics Center, Mexican Agricultural Secretariat (SAGAR).

Economic Research Service, USDA

demand by consumers while earning the higher profits generated by additional processing steps. These operations serve markets in large urban centers, either through supermarkets or butcher shops.

Small commercial production systems produce fewer hogs than the technologically advanced operations, not only because they are smaller but also because their lower technological level keeps productivity lower. Operations of this type occur throughout the country but are more concentrated in central and southern Mexico. Their share of the Mexican pork industry has been decreasing in favor of the growing number of technologically advanced farms.

Although most small commercial operations use breeding stock similar to that used by technologically advanced producers, their sanitary measures and marketing and slaughter outlets do not meet the standards of the more advanced farms. Because of their smaller size, rather than manufacturing their own feed they use commercial feed, which does not always meet the nutritional requirements of their hogs through the various production

phases. These mismatches decrease feed efficiency, raising feed costs as farmers purchase additional quantities to achieve adequate slaughter weights.

Small commercial operations also cannot guarantee the consistently high-quality hogs required by the slaughterhouses serving technologically advanced producers, so they must send their hogs for slaughter to municipal and/or local private slaughterhouses. Municipal slaughterhouses, managed by local government authorities, are located throughout the country, although their exact number and slaughter capacity is not known. In 1997, the Mexican agriculture ministry, SAGAR, estimated that these facilities slaughtered 4 million head, about a third of total slaughter that year. Generally these establishments fall short of modern standards for equipment and hygiene. As a result, and because of their smaller size, they sell their product in regional and local markets and in small urban centers, keeping these small commercial producers from receiving the higher hog prices available to technologically advanced producers whose hogs will be slaughtered for sale in the large urban and export markets.

Traditional backyard production systems are characterized by breeding stock of low genetic quality, a prolonged fattening period reflecting minimally nutritious feed or forage, and virtually nonexistent sanitary management. Traditional backyard production is practiced throughout rural Mexico and accounts for about 30 percent of Mexican pork production. Pork produced under these conditions provides a supply of meat in places where formal commercial channels cannot operate, but this meat is also considered a human health risk because pork from foraging pigs can carry teniasis (tapeworm) eggs. Campaigns are underway to control transmission of this parasite.

Traditional backyard producers view pigs as an extra source of income. The hogs are slaughtered on site or in local abattoirs for home use or for sale in nearby market centers. Little information is available to quantify the number of animals slaughtered under these conditions, but estimates for 1997 placed farm and local abattoir slaughter at 4.3 million head, about 36 percent of all swine slaughtered.

Production Costs Favor Large Operations

Recent data on Mexican pork production costs and returns (January 1994-January 1998) are available from SAGAR only for the technologically advanced and small commercial producers. Difficulty in quantifying feed supply, labor utilization, expenses, and revenue received in informal commercial channels precludes determining costs and returns for traditional backyard production systems.

Feed cost is the largest expense for both the technologically advanced and the small commercial production systems, accounting for approximately 62 percent of costs for technologically advanced operations and 75 percent for small commercial operations. The higher cost for small commercial producers comes largely from purchasing commercial feed at a higher unit price than technologically advanced producers who can benefit from economies of scale in purchasing feed or from vertical integration of feed production as part of their own operations. Expenses for veterinary medicine and supplies, the second-highest category of cost, account for nearly the same proportion of total expenses in both production systems, but technologically advanced producers suffer lower losses from disease and mortality because of strict sanitary and biosecurity measures.

Financial expenses—i.e., principal and interest payments on loans—are dramatically different for the technologically advanced and small commercial production systems. Financial expenses account for about 19 percent of total production costs for technologically advanced producers compared with only 4 percent for small commercial producers. But this difference is not necessarily to the advantage of small commercial producers since it reflects the fact that these producers have little access to credit and cannot afford to maintain feed stocks that incur financial costs.

Analysis of pork production profitability data from the January 1994-January 1998 study period, in fact, indicates the highest net returns have been earned by technologically advanced producers. These producers showed negative returns only from April 1995 to July 1996, while small commercial operations showed losses from October 1994 to January 1997, beginning 6 months before the technologically advanced producers and lasting 6 months longer.

The high production costs facing small commercial operations because of their small scale and low level of technology use, combined with the low prices they receive in smaller markets, have squeezed the small commercial producers economically, making them the group most negatively affected by structural changes. Their share of the Mexican pork market has fallen to around 20 percent in 1998.

As operations using technologically advanced production systems continue to gain market share through the use of modern distribution channels and greater territorial coverage, small commercial production will continue to decline. The Mexican government has encouraged small producers to contract with technologically advanced companies or to adopt more advanced technology and form groups with other small commercial producers, which might ensure their survival. Such groups could achieve the economies of scale needed by small producers to lower production costs and provide access to more profitable markets. **AO**

Leland Southard (202) 694-5187
southard@econ.ag.gov

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