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“The Mexican Hog Industry: Moving Beyond 2003”

Victor Ochoa and Steven Zahniser

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A. Introduction

For many years, Mexican hog producers benefited from favorable prices. Being among the highest in the world and certainly the highest among the NAFTA countries, prices usually were large enough to compensate for the very high costs of hog production in Mexico as well as certain institutional barriers. Today, however, the Mexican hog industry is facing a diverse set of economic challenges that threaten the very survival of many producers. These challenges include:

Competition with cheaper meat alternatives, such as chicken;

Changes in consumer preferences due to public perceptions that health problems are associated with pork;

Delayed implementation of sound eradication campaigns for Classical Swine Fever, Aujeszky's Disease, and other swine diseases; and

The lasting consequences of the recurrent financial crises that Mexico has suffered over the past 25 years.

Despite the many benefits that NAFTA is bringing to the Mexican economy, the agreement's impact on hog prices is leading some Mexican producers to treat NAFTA as a scapegoat for all the problems that the industry faces. The purpose of this paper is to show how Mexican hog producers can take advantage of NAFTA in order to increase their competitiveness. In particular, lowering feed costs, improving transportation facilities, and establishing greater control over swine diseases would go a long way towards increasing the competitiveness of Mexican producers.

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B. Meat Consumption in Mexico

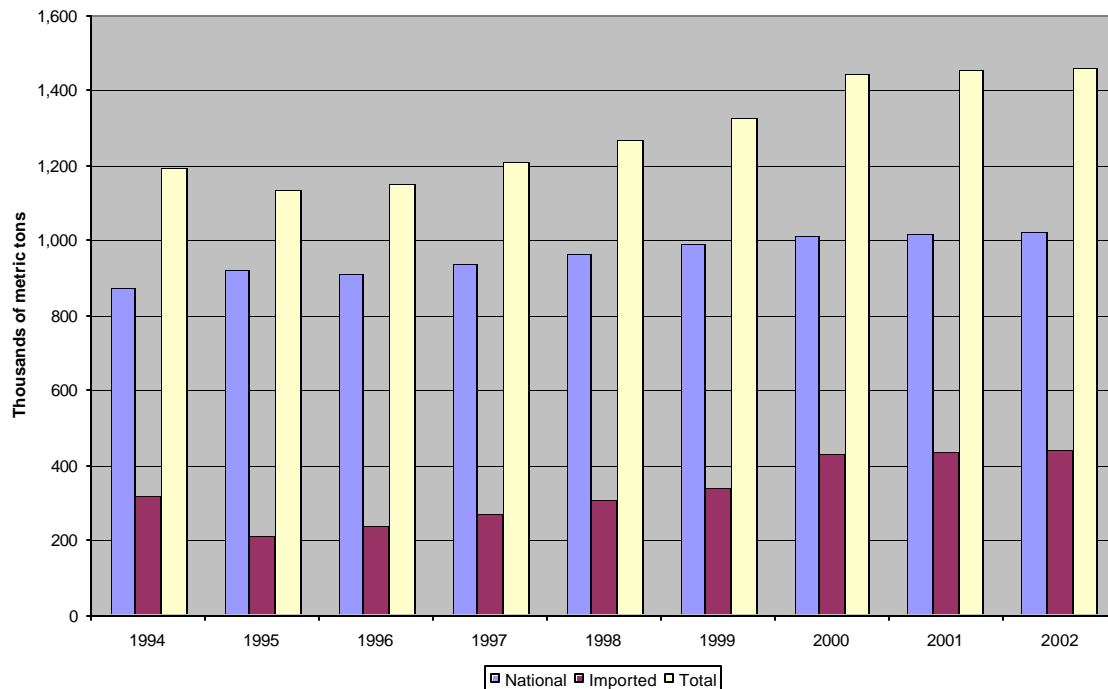
Per capita pork consumption in Mexico has undergone a great change over the last 25 years. After peaking at nearly 35 pounds per year in 1982, per capita pork consumption in Mexico started to decline in the face of competition from broiler meat and the diminished purchasing power of Mexican consumers. Recent estimates show that chicken is now the most consumed meat in Mexico, followed by beef and then pork (table 1). Total per capita meat consumption in Mexico is about 44 percent of the U.S. level and 57 percent of the Canadian level.

**Table 1 -- Mexican and U.S. Meat
Consumption by Type of Meat, 2000**

Product	Mexico <i>Pounds per capita</i>	U.S.
Beef	37.4	95.2
Pork	26.8	66.3
Broiler	47.5	91.2
Eggs	41.4	32.7
Total	153.1	285.4
Milk (gallons)	23.8	77.1

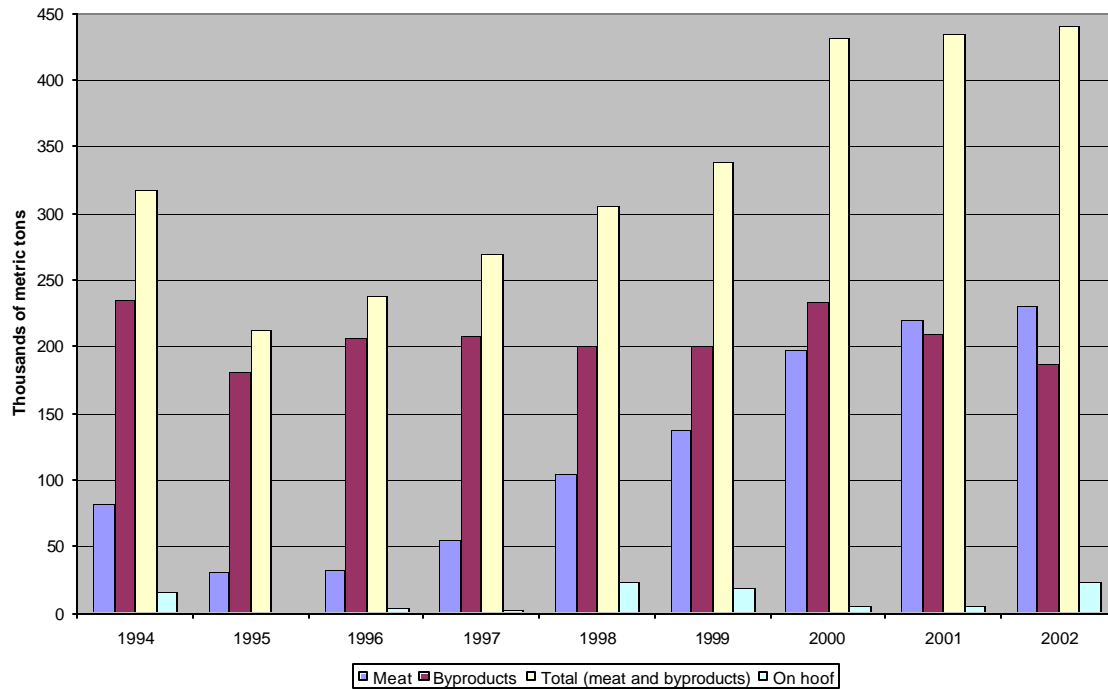
Although per capita pork consumption in Mexico is not as high as it was in the past, there is still tremendous potential for consumption growth in order to fulfill the nutritional requirements of the Mexican population. Due to population growth and increased per capita consumption, total pork consumption grew more than 23 percent between 1994 and 2002 (fig. 1). Since Mexican pork production grew only 17 percent over the same period, the importance of imports is obvious. In 2002, imports supplied close to 30 percent of Mexican pork consumption, compared with 27 percent in 1994.

Figure 1--Mexican Pork Consumption, 1994-2002



In addition, an important change has occurred in the composition of pork imports. In 1994, meat constituted only 26 percent of Mexican pork imports, while byproducts (lard, skin, and viscera) accounted for 74 percent (fig. 2). By 2002, the share associated with meat had grown to 52 percent. Meat's rising share of imports is a consequence of the decline in national production capacity suffered during the economic crisis of late 1994 and 1995. Although the flashpoint of this crisis was the sudden devaluation of the Mexican peso in December 1994, the deepest pain was felt in 1995, when the economy contracted by 6.2 percent in real terms (INEGI). On-hoof imports (live hogs) are relatively small in volume, but this trade acts as a price modulator in the Mexican market.

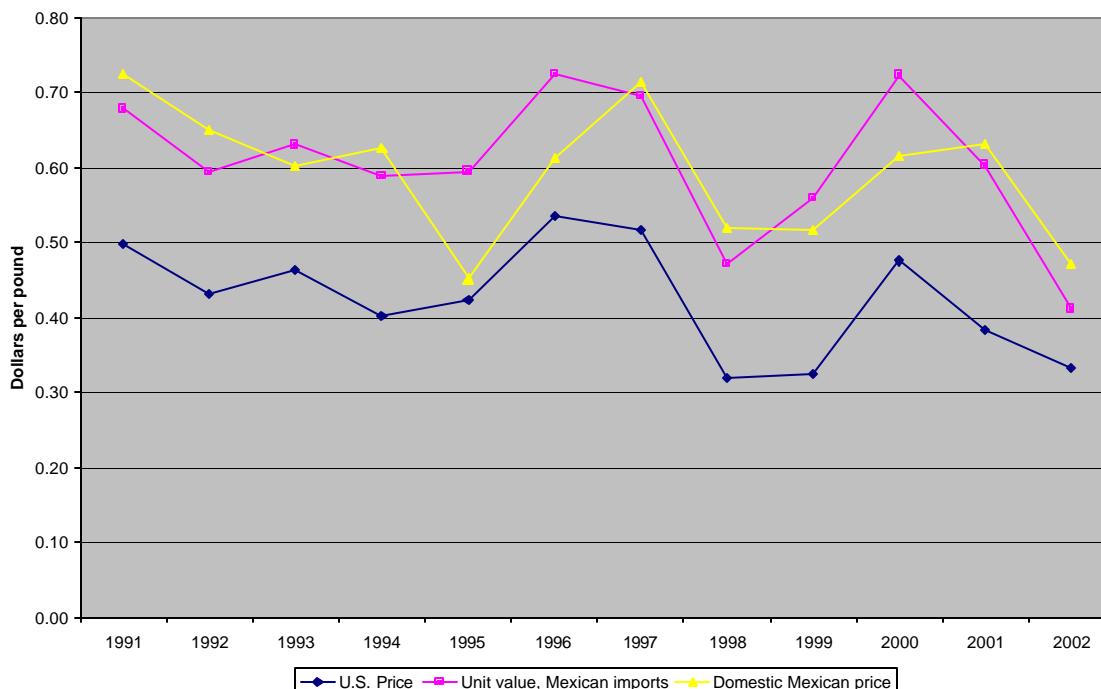
Figure 2--Composition of Mexican Pork Imports, 1994-2002



C. Mexican Hog Prices: From Paradise to Nightmare

In the years immediately preceding NAFTA, hog prices in Mexico were usually sufficient to compensate for the industry's high production costs. Although prices in the United States were substantially lower than prices in Mexico, trade barriers and transportation costs ensured that the unit value of imports was comfortably higher than the U.S. price (fig. 3).

Figure 3 -- Hog Prices in Mexico and the United States, 1991-2002



Since NAFTA's implementation in 1994, however, Mexican hog producers have had to contend with several occasions in which domestic prices were particularly low. In 1995, the primary cause was reduced demand for pork as a result of the economic crisis that year. In 1998, 1999, and 2002, the lower domestic price corresponded closely with a sharp decline in the U.S. price. Low prices in 1998 and 1999 also provided the setting for an antidumping case concerning U.S. hog exports to Mexico. In October 1999, the Mexican Secretariat of Commerce and Industrial Promotion (now called the Secretariat of Economy) issued a Final Determination in this case and applied a compensatory duty of \$0.351 (U.S. dollars)² per kilogram to U.S. slaughter hogs.

Still, the price that Mexican hog producers receive in the domestic market continues to be higher than the U.S. price, which has two major implications. First, Mexican consumers pay more for pork than consumers in Canada or the United States. This effect is particularly important to the development of the Mexican pork market, given that per capita income in Mexico is substantially lower than per capita income in the other NAFTA countries. Second, since Mexican pork demand is relatively elastic with

² All monetary values in this paper are expressed in U.S. dollars.

respect to price, the meat-processing companies that provide slaughtering services and prepare the primary cuts for packers and the fresh meat market are not able to pass along increases in hog prices. Thus, the ability of these firms to survive (as well as the services that they provide to the production chain) is in jeopardy any time that hog prices increase substantially.

D. Production Costs and Competitiveness

The Mexican hog industry faces a lot of competitiveness problems that can be traced to inefficiencies in the production chain:

(1) Grain production. Grain is obviously a key input to hog production, and Mexico possesses few comparative and competitive advantages in grain production. First, almost 75 percent of Mexico's surface area is located in arid or semiarid climates, which is not conducive to grain production. Moreover, the annual amount of underground water that Mexico has on a per capita basis is about 4,900 cubic meters (Comisión Nacional del Agua – CNA). This is very low, compared with 99,700 cubic meters for Canada and 9,500 cubic meters for the United States. Complicating matters is the fact that 70 percent of the rain falls only during four months, mainly in the south and southeast regions of the country. These regions are mostly mountainous, which again is a difficult setting for grain production.

For social and political reasons, the Mexican government historically pursued an agricultural strategy that segmented the sector. Numerous small farmers called *ejidatarios* were provided with user rights to parcels of farmland ranging from 10 to 25 hectares. In spite of its very questionable social benefits, this strategy strongly affected the efficiency and production capacity of these small farmers.

As a consequence of these factors, the average yield in Mexican grain production is about 2.5 metric tons per hectare, less than half the average yield in Canada and the United States, and the cost of key feed ingredients is 45 percent higher in Mexico than in the United States or Canada (table 2).

**Table 2 -- Comparison of Feed Ingredient Costs
in Mexico and the United States**

Ingredient	Price		Difference
	U.S.	Mexico	
	<i>Dollars per metric ton</i>		
Corn	103	150	46%
Soybean meal	180	262	46%

(2) Electricity. The Federal Electricity Commission (CFE – Comisión Federal de Electricidad) is a Mexican government monopoly that produces and distributes all the electrical power in the country. Like almost all government companies, the CFE lacks the resources to expand productive capacity and thus is unable to satisfy the electricity needs of new farm operations, including those in the hog sector. This forces producers to build all the new electrical lines for their farms. Sometimes, the length of these lines exceeds 3 miles.

(3) Oil and transportation costs. The Mexican government owns Petroleos Mexicanos (PEMEX), the Mexican oil company, which is responsible for the exploration, extraction, transformation and distribution of all Mexican oil. Historically, PEMEX had been the most important source of government revenue, and its prices for the internal market are more related to government revenue needs, rather than international prices or any competitive strategy. For this reason, the cost of gasoline and diesel fuel is typically far higher in Mexico than in Canada and the United States.

In addition, Mexican highways are very expensive and insufficient. Table 3 provides two illustrative examples of transportation costs in Mexico and the United States. As can be seen in the table, the distance from farms to abattoirs, highway tolls, and the cost of fuel are all substantially higher in Mexico than in the United States.

**Table 3--Comparison of Transportation Costs,
United States and Mexico**

Concept	U.S.	Mexico
Distance to market, round trip (miles)	250	410
Toll cost per trip	\$5.00	\$140.91
Fuel cost per gallon	\$1.40	\$1.79

(4) Labor costs. The cost of labor is probably the only competitive advantage that Mexican hog producers have. Although the minimum wage in Mexico is \$0.43 per hour, the farm wage rate is normally in the range of \$0.70 to \$1.20 per hour. When compared with U.S. wage rates ranging from \$5.50 to \$7.50 per hour, this is a tremendous competitive advantage for Mexican hog producers, even though it has enormous social and economic implications for the country.

(5) Cost comparison. Table 4 compares the production cost of two good hog-farrowing units in the United States and Mexico. The Mexican hog operation in the table produces a 5.6-kilogram weaned pig at \$22.29, compared with \$20.10 in the United States. Feed accounts for 44 percent of the Mexican producer's total costs, compared with 29 percent in the United States. The difference in feed costs (\$4.01) is partially offset by the savings that the Mexican farmer has for labor and management costs (\$4.25). When catching and hauling costs are compared, Mexican expenses are about \$0.86 higher per animal than in the United States.

Table 4--Comparison of Production Costs in United States and Mexico

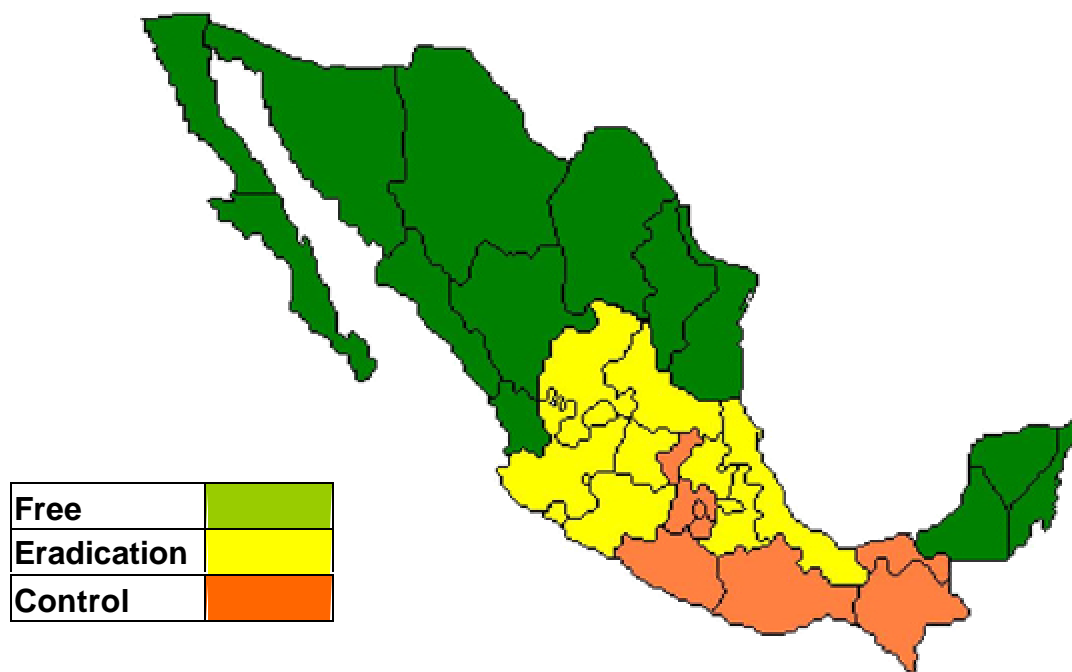
Concept	U.S. top	Mexico	Difference	%
Production Credit	\$20.10	\$22.90		
Costs of Production				
Breeding Stock	\$0.66	\$1.27	\$0.60	91%
Management	\$2.00	\$0.96	-\$1.04	-52%
Salaries & Benefits	\$4.56	\$1.33	-\$3.23	-71%
Feed	\$5.87	\$9.88	\$4.01	68%
Medication	\$0.27	\$0.37	\$0.10	35%
Vaccination	\$0.15	\$0.19	\$0.05	34%
Catching and Hauling	\$0.03	\$0.90	\$0.86	2799%
Utilities	\$0.65	\$0.61	-\$0.04	-6%
Depreciation	\$2.03	\$2.81	\$0.78	39%
Repairs & Maintenance	\$0.49	\$0.50	\$0.01	2%
Supplies	\$0.46	\$0.42	-\$0.04	-8%
General & Administrative	\$0.95	\$1.50	\$0.55	188%
Waste Disposal	\$0.48	--	-\$0.48	-100%
Communications	\$0.02	--	-\$0.02	-100%
Subtotal	\$18.62	\$21.98	\$3.36	18%
Other	\$1.48	\$1.56	\$0.09	6%
Total	\$20.10	\$22.29	\$2.20	17%

(6) Health costs. The Mexican hog sector still faces many problems related to the inadequate health control strategies followed by the Government:

- Mexico lacks adequate diagnosis centers.
- Mexico lacks proper infrastructure for controlling the movement of livestock.
- Mexico lacks adequate controls on backyard farms.
- In some areas, health status is more a political than a technical issue.

For those reasons, Mexico still has Classical Swine Fever (CSF) and Aujeszky's Disease, in addition to a number of other diseases that affect hog production, including Porcine Reproductive and Respiratory Syndrome (PRRS), Circovirus, Mycoplasma, Salmonella, and Ileitis. Of these diseases, CSF and PRRS have the strongest impact on the competitiveness of Mexican hog producers. Figure 4 illustrates the current health status for CSF.

Figure 4 – Current Health Status for Classical Swine Fever, March 2002



(7) Social, political, and economic environment. Other inefficiencies of Mexican producers are related to a general lack of competitive financing, as interest rates in Mexico are by far larger than in the United States. Moreover, the country's social and economic conditions generate problems such as robberies that are far less common in Canadian and U.S. farm operations. In addition to resulting in direct economic losses, robberies greatly complicate efforts to control the spread of animal diseases. In some parts of Mexico, particularly in the South and Southeast, crime has an extremely serious impact on the efficiency of hog producers.

Three conclusions can be drawn from the above discussion of the Mexican hog sector's production costs. First, the cost of labor is the main competitive advantage of Mexican hog producers.

Second, feed costs offer Mexican producers perhaps the greatest opportunity to reduce production costs and increase their competitiveness. Current Mexican policy restricts the importation of corn, forcing producers to use the less efficient and more expensive imported sorghum. As a result, the Mexican hog sector must contend with feed costs that are the third most expensive among the world's 23 major hog producers (table 5). Although Mexican producers face the fourth highest hog prices, they rank 14th in terms of production costs.

Third, the eradication of Classical Swine Fever (CSF) and the improvement of health-control measures are strong opportunities to reduce production costs, since swine diseases have tremendously detrimental effects on hog production. CSF is by far the most important limiting factor for pork trade on both a global and a national basis. Although the direct cost of vaccinations is not particularly high (\$0.05 per market pig), one major concern is the side effects of vaccines, especially with respect to herds infected with PRRS.

Table 5 – Comparison of Hog Prices and Production Costs, Selected Countries, May 2002

	Price/Kg	Rank in	Cost/Kg	Rank in	Feed
Country	USD	price	USD	cost	Cost
Japan	\$ 1.97	1	\$ 1.71	23	\$ 0.25
Taiwan	\$ 1.44	2	\$ 1.15	20	\$ 0.20
Korea, Rep. of	\$ 1.39	3	\$ 1.38	21	\$ 0.28
Mexico	\$ 1.35	4	\$ 0.99	14	\$ 0.23
United Kingdom	\$ 1.33	5	\$ 1.33	22	\$ 0.19
Australia	\$ 1.33	6	\$ 0.86	9	\$ 0.16
Philippines	\$ 1.31	7	\$ 0.87	10	\$ 0.22
Denmark	\$ 1.27	8	\$ 0.90	11	\$ 0.16
Belgium/ Lux.	\$ 1.25	9	\$ 1.09	18	\$ 0.17
Netherlands	\$ 1.25	10	\$ 1.09	17	\$ 0.17
Germany	\$ 1.17	11	\$ 1.06	16	\$ 0.15
France	\$ 1.12	12	\$ 1.04	15	\$ 0.15
Italy	\$ 1.08	13	\$ 1.15	19	\$ 0.18
Czech Rep.	\$ 1.03	14	\$ 0.92	13	\$ 0.16
Poland	\$ 0.96	15	\$ 0.90	12	\$ 0.20
Spain	\$ 0.94	16	\$ 0.82	7	\$ 0.19
Thailand	\$ 0.91	17	\$ 0.72	4	\$ 0.19
China	\$ 0.87	18	\$ 0.75	5	\$ 0.16
United States	\$ 0.86	19	\$ 0.84	8	\$ 0.15
Canada	\$ 0.81	20	\$ 0.82	6	\$ 0.13
Chile	\$ 0.73	21	\$ 0.63	3	\$ 0.16
Brazil	\$ 0.61	22	\$ 0.56	2	\$ 0.15
Argentina	\$ 0.57	23	\$ 0.48	1	\$ 0.11

Source: PIC

E. Options

The following options are just a few examples of what could be done to improve the competitiveness of Mexican hog producers, without resorting to protectionist measures.

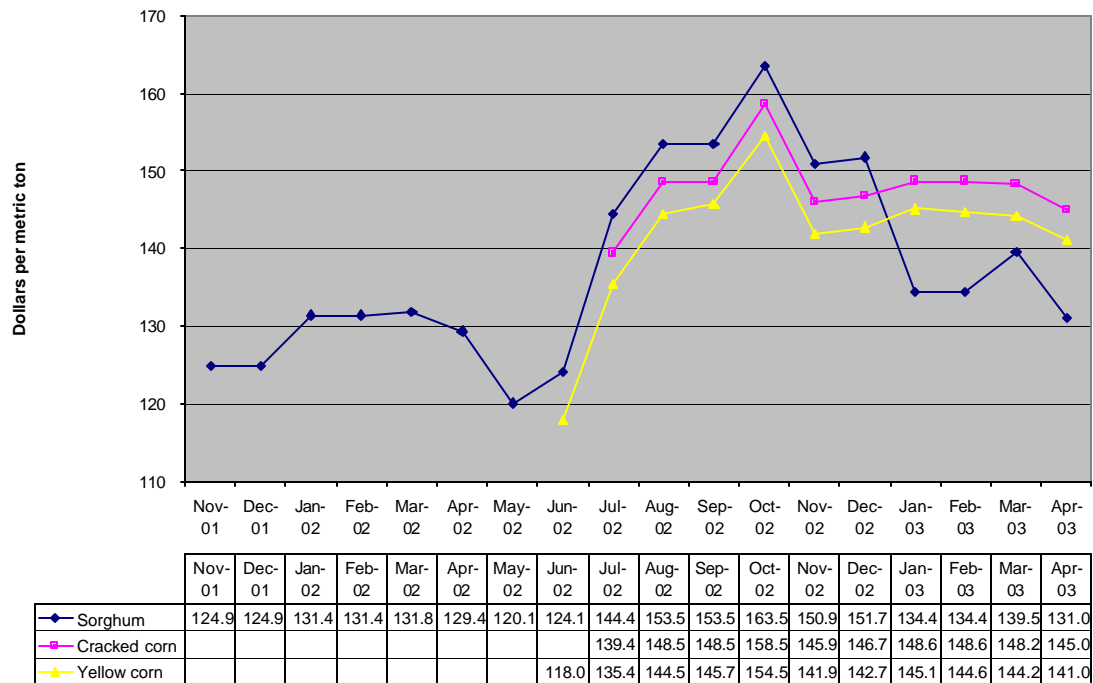
(1) Free trade for the entire production chain. Allowing Mexican hog producers to import corn on an unrestricted basis would enable them to take advantage of their proximity to the United States, one of the largest and most

efficient producers of corn in the world. Corn is one of just a handful of U.S. exports to Mexico that received a 14-year transition period (1994-2007) to duty-free trade as part of NAFTA. In hindsight, this restrictive policy appears to have had some negative effects on Mexican hog producers. It limits the amount of corn that can be imported, it appears to exert upward pressure on the price of substitute feed grains (most notably sorghum), and it denies Mexican producers the opportunity to utilize hedges and other opportunities for speculation with respect to corn.

To lessen these effects, Mexico has pursued a more liberal import policy towards corn than NAFTA requires. As an example, consider the policy implemented for 2002. NAFTA obligated Mexico to provide the United States with a duty-free tariff-rate quota (TRQ) of about 3.2 million metric tons. Under the agreement, imports above this amount could have been charged an over-quota tariff of 108.9 percent. Instead, the Mexican government issued import permits (referred to as *cupos*) that allowed an additional 3.167 million metric tons of U.S. corn to be imported, with over-quota tariffs of just 1 percent for yellow corn and 2 percent for white corn. Nevertheless, the *cupo* system still operates as an import restriction, as both the duty-free quantity under NAFTA and any additional amounts subject to *cupos* must be allocated to parties in several industries, including not only hog producers but also poultry producers, starch manufacturers, and flour millers, among others.

There is some evidence that the *cupo* policy has made sorghum more expensive than corn in the Mexican import market. Historically, corn and sorghum prices in the United States (both farm prices and at the Chicago Board of Trade) have been roughly the same. In Mexico, however, U.S. sorghum has tended to have a higher price than Mexican sorghum throughout the NAFTA era. In the State of Veracruz, sorghum imports were even more expensive than cracked corn imports from July to December 2002 (fig. 5). During that period, cost differences between sorghum and corn in excess of \$7.50 per metric ton were common.

Figure 5 -- Veracruz Prices for Imported Grains, November 2001 - April 2003



All prices are CIF.

As an animal feed, corn generates about 3 to 5 percent more energy than sorghum. Thus, if we compare the prices of yellow corn and sorghum in June 2002 (\$118.00 and \$124.50 per metric ton, respectively) and account for a 3-percent difference in efficiency, the real price of sorghum is \$127.83 ($\$124.50 / 0.97$). The resulting price difference is close to \$10.00 per metric ton, making sorghum about 8 percent more expensive than corn.

To avoid this additional cost, Mexican producers have resorted to purchasing cracked corn, which is more expensive than yellow corn, since one must pay \$3 to \$4 per metric ton for the cracking process. However, Mexican custom law treats cracked corn as a processed feed, so under the terms of NAFTA, cracked corn from the United States faced a duty of only 1 percent in 2002 and now enters Mexico duty-free. The increased use of cracked corn appears to have depressed the price of imported sorghum during the first quarter of 2003 (fig. 5).

(2) Improve Maritime Transportation Facilities. Upgrading Mexico's maritime facilities should provide additional opportunities to hold down feed costs, as the mode of transportation used to import grain greatly affects its

cost (table 6). When rail alone is used, transportation accounts for 22 percent of the total cost, compared with 17 percent when an ocean-rail combination is used.

Table 6 -- Comparison of Grain Transport Costs, Ocean-Rail Versus Rail

	CBOT	Base	Freight from U.S.	Local Rail Freight	Duties	Total
By ocean-rail	\$80.70	\$13.77	\$11.50	\$9.81	\$6.68	\$122.46
Percent of total	66%	11%	9%	8%	5%	
By rail	\$80.70	\$16.92	\$27.59	n.a.	\$0.62	\$125.83
Percent of total	64%	13%	22%	0%	0%	

Mexican hog producers already have benefited from substantial improvements to the Port of Veracruz. In 1998, the Port was dredged to a depth of 36 feet, and work is underway to dredge the port to about 40 feet from the harbor entrance to the grain terminals (Hall, 2002). Today, the Port accounts for almost 70 percent of all sea trade in Mexico.

However, the Port of Veracruz is only convenient for producers in East-Central Mexico. Ports such as Coatzacoalcas (also in the State of Veracruz) and Progreso (near the city of Merida, Yucatán) provide additional alternatives to producers along the Gulf of Mexico, but these facilities need significant improvements. Government actions to improve existing port facilities and to extend these efforts to the Pacific Coast are required to increase the competitiveness of Mexican hog producers.

(3) Use Alternative Feed Ingredients. In countries that are not competitive grain producers, hog producers have succeeded through the use of alternative feed ingredients, such as byproducts from brewing and baking. For instance, the feed costs of German and French hog producers are comparable to those in Canada and the United States (table 5). Neither Germany nor France is as competitive as Canada and the United States in terms of grain production, but by using other feed options, each has successfully replaced corn and sorghum from the diets of its hogs. The use of alternative feed ingredients also has clear environmental benefits, as it puts materials that would otherwise be garbage to productive use.

In Mexico, hog producers have experienced savings in feed costs close to \$6.00 per metric ton, just through the use of rice polish, wheat bran, tapioca,

brewing byproducts, and other alternative ingredients. Some of these products need to be imported, so the opening of borders and the improvement of transportation facilities would definitely help Mexican producers in this area as well.

(4) Improve Sanitary Controls. It is almost impossible for the Mexican hog sector to be competitive when it still faces diseases that have been eradicated in Canada and the United States. A high-priority campaign to eradicate CSF in Mexico would help to reduce costs for Mexican producers and facilitate trade. Changes in laws, improved practices concerning the movement of animals, and stricter control of backyard producers need to be implemented, and these measures should be based on technical criteria.

(5) Expand Agricultural Finance. Competitiveness requires improvements in productive facilities and therefore investments in new sites of operation, feeding systems, artificial insemination, and so on. The government's new approach to agricultural finance through FIRA (*Fideicomisos Instituidos en Relación con la Agricultura*) is helping producers to invest and improve their facilities, but still more resources are required.

F. Conclusion

The problems that Mexican hog producers face require innovative solutions, some of which may go against established convention. Government and producers need to work together in order to increase the sector's competitiveness, but erecting new barriers to trade creates inefficiencies and leads to higher costs. It is important that all parties recognize that free trade is in the best interest of the consumer, and that **it is virtually impossible for Mexican hog producers to compete in an open market for final products when the market for raw materials and other inputs are kept artificially high via continuing import restrictions.**

In the immediate future, Mexico is not likely to match Canada and the United States in terms of being a competitive grain producer. But it is not necessary for Mexican hog producers to duplicate every element in the balance sheets of U.S. and Canadian hog producers, nor is it even necessary for Mexican producers to match the production costs of their Canadian and U.S. competitors. The Mexican hog sector simply needs to get its production costs below the sum of foreign production costs plus freight costs

to Mexican markets. With a little luck and the right combination of government and private-sector efforts, this task is a feasible one.

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