Tracking U.S. Grain, Oilseed and Related Product Exports in Mexico

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Executive Summary

What Is the Issue?

U.S. grain, oilseed, and related product exports to Mexico averaged 22.2 million metric tons (mmt) per year from 2008-2012 with an average annual value of $7.3 billion. This is twenty percent more volume than the average of the early 2000s and two and a half times the value. Continued trade growth has spurred interest in how these products are transported throughout Mexico and how they are used.

While much is known about the transportation and uses of U.S. grains and soybeans and related products within the United States, much less is known about how these U.S. commodities are transported within Mexico, their final destinations, and how they are used in Mexico. This study reports the destination, mode of transportation and end uses of U.S. grains, oilseeds, and related products (grain as a group) within the Mexican market.

What Did the Study Find?

Yellow corn, used mostly for animal feed and corn starch, is the largest volume export of these product categories, accounting for 35 percent in 2011. Soybeans, crushed for meal and oil, accounted for 13 percent, while hard wheat, used for human consumption, and grain sorghum, used for animal feeding, accounted for ten percent each. Together, these top four products accounted for 68 percent of the volume of U.S. grain and oilseeds exports to Mexico. Yellow corn also dominated export values to Mexico with 29 percent during 2011, followed by soybeans (20 percent), hard wheat (10 percent), and sorghum (8 percent).

Outside these top four products, but still important, are dried distiller's grain (DDG), high fructose corn syrup (HFCS), soybean meal, soft wheat, and rice. While most of the major products exported to Mexico have a long history of presence in the market, the emergence of DDG, HFCS, and soybean meal is relatively recent. Exports of these products to Mexico each grew more than five hundred percent since 2000. In total, fourteen product categories are covered in this report in various degrees of detail, based upon the availability of data.

Four ports of entry handled 77 percent of the total U.S. grain exports by volume in 2011: Nuevo Laredo, Veracruz, Piedras Negras and Ciudad Juárez. The seaports of Progreso in Yucatan and Coatzacoalcos, as well as the land ports of Matamoros, Nogales, and Nuevo Progreso in Tamaulipas are also important gateways.

Rail is the dominant mode of transport for U.S. grain entering Mexico, accounting for 14.78 mmt, or 62 percent of entry. Nearly all land ports of entry connect with a U.S. railroad with Nuevo Progreso being the only major port of entry which does not have rail access.

Seaports are the second most dominant mode of entry for U.S. agricultural exports to Mexico, accounting for 8.11 mmt, or 34 percent. Based upon information from Mexican authorities, at least 42 percent of these imports leave the seaport area via rail while at least 17 percent leave via

truck. The remainder falls in a "rail/truck" combination, continues to another Mexican seaport, or the mode of transportation is not identified.

Once inside Mexico, rail shipments of U.S. grains, oilseeds, and related products are handled by the two major Mexican rail companies: Ferromex/Ferrosur and Kansas City Southern de Mexico. Industry data show that at least 18.7 mmt of the 23.8 mmt, or nearly eighty percent, of these U.S. exports to Mexico were shipped by rail within Mexico to their final destination. The remainder is shipped by truck. Jalisco was the largest single destination for rail shipments, receiving 3.25 mmt, followed by Queretaro at 2.06 mmt and the Estado de Mexico at 1.87 mmt.

The largest rail origin-destination pairs, those with at least a million metric tons, include Nuevo Laredo-Queretaro (1.91 mmt), Piedras Negras-Jalisco (1.67 mmt), Veracruz-Puebla (1.48 mmt), Nuevo Laredo-Nuevo Leon (1.43 mmt), Nuevo Laredo-Estado de Mexico (1.34 mmt), and Ciudad Juárez-Jalisco (1.28 mmt).

How Was the Study Conducted?

This project has four main objectives that will provide valuable information on U.S. grain, oilseeds and related product exports to Mexico:

1. Analyze the net grain exports to Mexico in metric tons.
2. Determine the main Mexican entry points.
3. Identify the modes of transportation used.
4. Determine the final Mexican State destinations.

The data were gathered from several Mexican and American databases from government agencies, private sector firms, and agricultural organizations. Data from Mexico comes from the statistics division of the Mexican Agricultural Ministry, Servicio de Información y Estadística Agroalimentaria y Pesquera of Secretaria de Agricultura, Ganadería, Desarrollo Rural, Pesca y Alimentación (SIAP/SAGARPA), a valuable source of information for determining volumes of Mexican imports of grain from the United States, by both entry point and mode of entry.

Data were also gathered from the main rail transportation providers in Mexico, Ferromex and Kansas City Southern de Mexico. These data revealed how U.S. product was moving within Mexico, and what the destination of these product by volume and origin.

Data were collected from the Global Agricultural Trading System (GATS), U.S. Foreign Agricultural Service (FAS), and World Institute for Strategic Economic Research through their trade data base, WiserTrade. These data were used to validate trade volumes and entry points for exports from the United States into Mexico. Information from various FAS Global Agricultural Information Network reports was reviewed to determine uses for U.S. products covered by this report. Further, data were requested from the U.S. grain organizations in an effort to obtain the fullest picture possible of destinations and uses.

Once the data were gathered, they were organized so that the destinations, modes of transportation and uses of U.S. grain within Mexico. The results are reported here.

Tracking U.S. Grain, Oilseed and Related Product Exports in Mexico

Introduction

With the implementation of the North American Free Trade Agreement in 1994, trade between Mexico and the United States has increased substantially. Between 2010 and 2011, Mexican grain, oilseed, and related product (from this point, this product group will be referred to as grain) imports from the United States increased 2.75 million metric tons (mmt) or 13 percent (table 1). Mexico is now the second largest grain importer in the world after Japan.

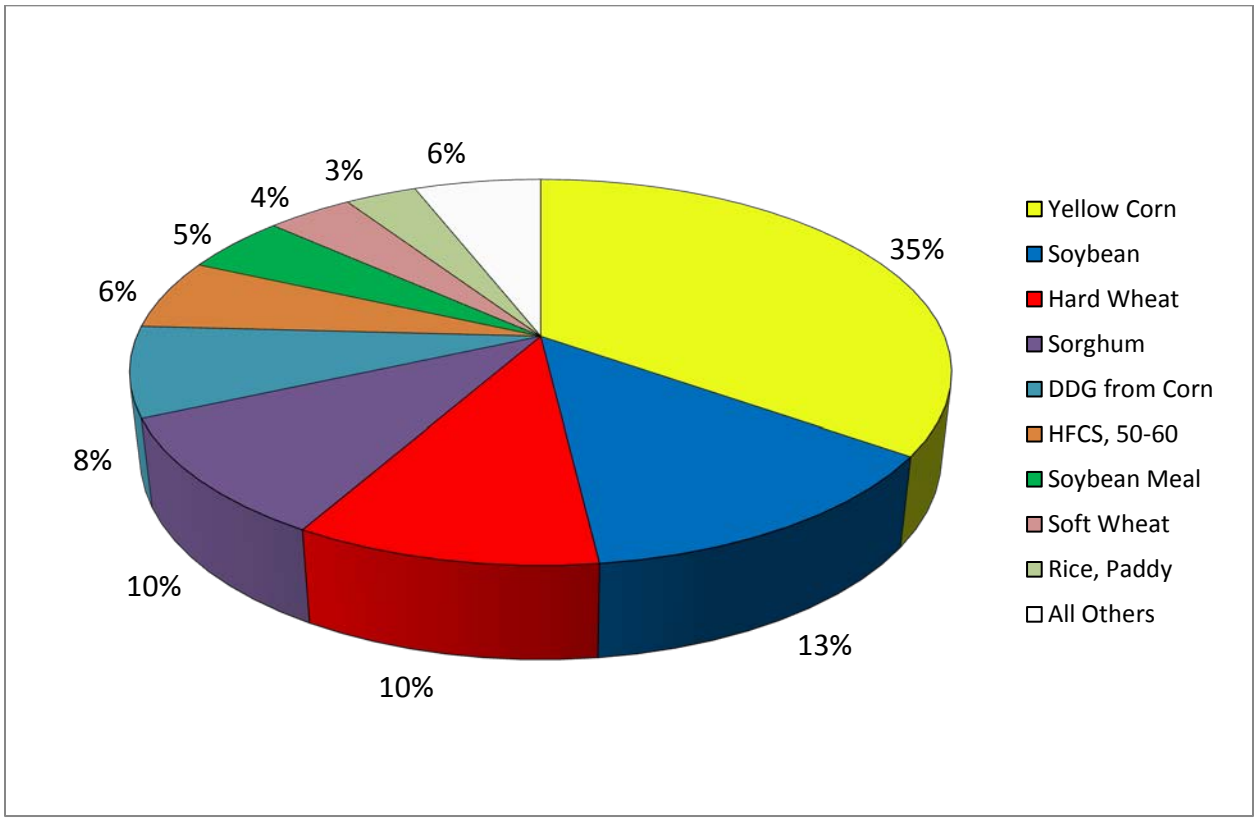
Table 1. U.S. Grain, Oilseed and Related Product Exports to Mexico, 2010 - 2011

Commodity	2010				2011			
	Volume (1,000 MT)	%	Value ($ Million)	%	Volume (1,000 MT)	%	Value ($ Million)	%
Yellow Corn	7,274.9	35	$1,241.4	24	8,352.9	35	$2,343.0	29
Soybean	3,558.4	17	$1,424.3	27	3,203.0	13	$1,606.8	20
Hard Wheat	2,035.8	10	$469.4	9	2,431.9	10	$768.8	10
Sorghum	2,252.9	17	$396.6	8	2,421.9	10	$673.8	8
DDG from Corn	1,608.5	8	$273.4	5	1,811.8	8	$466.5	6
HFCS, 50-60	1,176.1	6	$356.3	7	1,420.4	6	$532.7	7
Soybean Meal	897.2	4	$290.5	6	1,172.6	5	$427.1	5
Soft Wheat	557.9	3	$118.7	2	969.6	4	$290.1	4
Rice, Paddy	773.9	4	$264.3	5	808.1	3	$270.3	3
White Corn	505.8	2	$106.0	2	589.0	2	$197.0	2
Soybean Oil, Crude	141.7	1	$127.0	2	296.3	1	$147.5	2
Milled Rice/Long Grain	54.4	<1	$31.7	1	100.9	<1	$60.7	1
Corn Meal	52.9	<1	$26.6	1	85.6	<1	$47.6	1
Corn for Popcorn	62.6	<1	$31.6	1	54.2	<1	$30.3	<1
Soybean Oil, Refined	53.3	<1	$51.9	1	39.4	<1	$53.6	1
Rape/Colza Meal	9.8	<1	$2.2	<1	35.9	<1	$7.8	<1
Other Rice (Semi-Milled)	11.2	<1	$10.3	<1	12.7	<1	$12.4	<1
Sunflower	9.5	<1	$9.4	<1	9.3	<1	$9.7	<1
Corn for Planting	6.7	<1	$18.6	<1	8.5	<1	$22.7	<1
Crude Rape/Colza Oil	6.2	<1	$5.7	<1	6.9	<1	$8.2	<1
DDG from Other Grain	7.5	<1	$1.3	<1	5.2	<1	$1.5	<1
Sunflower for Planting	0.031	<1	$1.1	<1	0.012	<1	$0.8	<1
Beet Sugar	0.000	0	$0.0	0	0.002	<1	$0.003	<1
Durum Wheat	11.2	<1	$1.6	<1	0.0	0	$0.0	0
TOTAL	**21,068.4**	**100**	**$5,259.8**	**100**	**23,835.9**	**100**	**$7,979.3**	**100**

Source: Servicio de Información Agroalimentaria y Pesquera (SIAP), SAGARPA, Mexico.

Yellow corn, which in Mexico is typically for industrial uses such as in corn starch, cereals, and animal feed, accounts for the largest share of U.S. exports to Mexico, representing 35 percent of grain export volume in 2011. Soybeans accounted for 13 percent, hard wheat and sorghum with 10 percent each, DDG (dried distiller grains) from corn with 8 percent, HFCS (high-fructose corn syrup) with 6 percent, soybean meal with 5 percent, soft wheat with 4 percent, and Rice, Paddy with 3 percent (figure 1).

Figure 1. U.S. Grain, Oilseed and Related Product Exports to Mexico by Share of Volume, 2011



Source: Servicio de Información Agroalimentaria y Pesquera (SIAP), SAGARPA, Mexico.

All other grains represent six percent of exports, these include: white corn, soybean oil, corn for popcorn, rice milled/semi-milled long grain, corn meal, durum wheat, rice milled/semi-milled other, rape/colza meal, sunflower, DDG from other grains, corn for planting, rape/colza oil crude, sunflower for planting, and beet sugar.

While much is known about processing U.S. grains and soybeans, information on transportation modes and final market destination of these commodities in Mexico is not easily available. This project has four main objectives that will provide valuable information on U.S. grain exports to Mexico:

5. Analyze the net grain exports to Mexico in metric tons.
6. Determine the main Mexican entry points.
7. Identify the modes of transportation used.
8. Determine the final Mexican State destinations.

Data Description

The data used in this report was gathered from several Mexican and American databases from government agencies, private sector firms, and agricultural organizations. Data from Mexico comes from the statistics division of the Mexican Agricultural Ministry, *Servicio de Información y Estadística Agroalimentaria y Pesquera* of *Secretaria de Agricultura, Ganadería, Desarrollo Rural, Pesca y Alimentación* (SIAP/SAGARPA), which proved to be a valuable source of information. This report also includes data from the main rail transportation providers in Mexico. Data were also requested from the U.S. grain organizations in an effort to obtain the fullest picture possible of destinations and uses.

After this introduction, the report includes a general description of the main ports of entry of U.S. grain exports into Mexico and the main transportation modes used to move grain within Mexico from ports of entry to destination. Analyses in various degrees of detail based upon data availability were conducted of the following products:

- Yellow Corn
- Soybean
- Sorghum
- Hard Wheat
- Soybean Oil
- Corn for Popcorn
- Soft Wheat
- Paddy Rice
- Soybean Meal
- Dried Distillers Grain (DDG)
- High-Fructose Corn Syrup
- Canola Meal
- Sunflower Seeds
- White Corn

Ports of Entry and Transportation Modes for U.S. Grains Exports to Mexico

The Mexican transportation system that connects to the U.S. system includes land ports of entry and ocean ports. The main land ports of entry and ocean ports are served both by highway and rail networks. The Mexican rail system is privatized, and there are 2 main concessionaires that operate the system: Kansas City Southern de Mexico (KCSM) and Ferromex/Ferrosur.[1]

KCSM serves the following land and sea ports of entry:

- Nuevo Laredo/Laredo
- Matamoros/Brownsville
- Veracruz (Gulf Coast)
- Tampico, near Altamira (Gulf Coast)
- Lazaro Cardenas (Pacific Coast)

Ferromex/Ferrosur serves several land border crossings including:

- Piedras Negras/Eagle Pass
- Ojinaga/Presidio
- Ciudad Juárez/El Paso
- Nogales/Nogales
- Mexicali/Calexico
- Veracruz (Gulf Coast)
- Altamira (Gulf Coast)
- Coatzacoalcos (Gulf Coast)
- Guaymas (Pacific Coast)
- Mazatlan (Pacific Coast)
- Manzanillo (Pacific Coast)

[1] Ferromex and Ferrosur merged and are now operating as a single company.

The port of Progreso in the Yucatán Peninsula has a short road connection to the Chiapas-Mayab rail line. Figure 2 shows the main rail concessionaires and connecting land and ocean ports. Please see Appendix A for a map of the Mexican highway system.

Figure 2. Mexican Rail Transportation System

The top four ports of entry handled 77 percent of the total U.S. grain exports by volume in 2011: Nuevo Laredo, Veracruz, Piedras Negras, and Ciudad Juárez. Table 2 presents the detailed breakdown by port of entry and Mexican state. Shipments data in this report are organized and presented by Origin (Mexican entry port city) and Destination (Mexican State). Please see Appendix B for a map of Mexico by state.

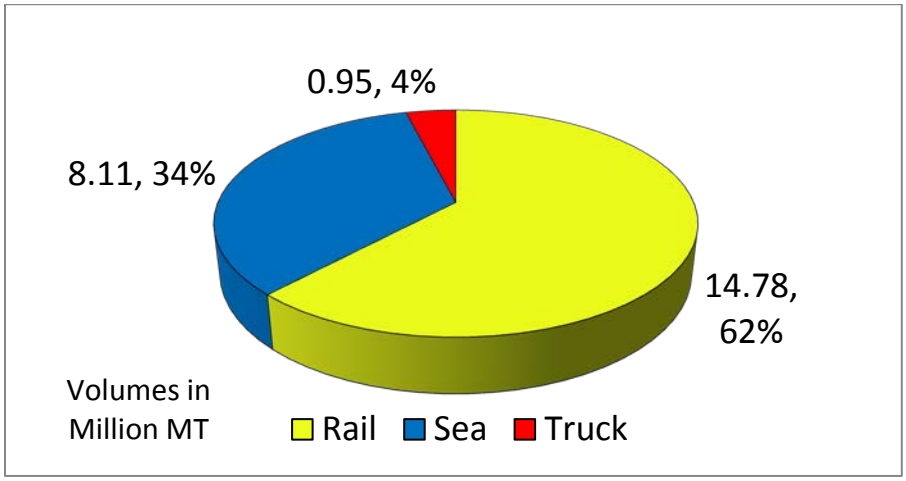
Table 2. Ports of Entry for U.S. Grains, Oilseeds and Related Products Exported to Mexico, 2010/2011

Border/Port Location	Mexican State	Transport Mode Arriving in Mexico	Transport Mode Leaving Mexican Customs	2010 Volume 1,000 MT	2010 Value U.S. $ (Million)	2011 Volume 1,000 MT	2011 Value U.S. $ (Million)
Nuevo Laredo	Tamaulipas	Rail	Rail	5,008.5	$1,220.4	5,399.7	$1,726.6
Veracruz	Veracruz	Sea	Rail/Truck	4,919.3	$1,258.9	5,367.3	$1,803.6
Piedras Negras	Coahuila	Rail	Rail	3,255.8	$917.6	4,228.0	$1,478.2
Ciudad Juárez	Chihuahua	Rail	Rail	3,238.4	$627.6	3,268.0	$1,036.6
Progreso	Yucatán	Sea	Rail/Truck	1,315.7	$358.8	1,296.0	$456.6
Matamoros	Tamaulipas	Rail	Rail	822.1	$282.3	822.7	$359.0
Coatzacoalcos	Veracruz	Sea	Rail/Truck/Sea	724.4	$147.0	789.6	$246.0
Nogales	Sonora	Rail	Rail	570.7	$154.1	736.2	$244.8
Nuevo Progreso	Tamaulipas	Truck	Truck	456.4	$81.7	722.4	$202.1
Tuxpan	Veracruz	Sea	Truck	396.9	$73.4	545.8	$166.2
Mexicali Baja	California	Rail	Rail	121.4	$28.7	285.8	$92.1
Altamira	Tamaulipas	Sea	Rail/Truck	---	---	53.2	$15.4
Mexicali Baja	California	Truck	Truck	41.5	$18.5	49.9	$23.4
Lázaro Cárdenas	Michoacán	Sea	Rail/Truck	---	---	49.7	$11.8
Reynosa	Tamaulipas	Truck	Truck	30.9	$17.2	41.3	$24.5
Tijuana Baja	California	Rail	Rail	38.5	$7.7	35.4	$9.9
Santa Teresa	Chihuahua	Truck	Truck	28.7	$9.2	31.4	$11.4
Tijuana	Baja California	Truck	Truck	29.8	$14.1	31.3	$17.8
Nogales	Sonora	Truck	Truck	24.4	$11.3	29.1	$15.3
Nuevo Laredo	Tamaulipas	Truck	Truck	21.4	$17.6	20.7	$19.0
Manzanillo	Colima	Sea	Rail/Truck	---	---	12.3	$3.2
Zaragoza	Chihuahua	Truck	Truck	6.9	$4.2	6.6	$3.5
Piedras Negras	Coahuila	Truck	Truck	5.9	$1.1	3.6	$1.0
Ciudad Juárez	Chihuahua	Truck	Truck	2.3	$3.0	2.5	$3.9
Matamoros	Tamaulipas	Truck	Truck	4.4	$3.8	2.2	$3.7
Colombia	Nuevo León	Truck	Truck	0.9	$0.9	2.0	$2.0
Ciudad Acuña	Coahuila	Truck	Truck	2.1	$0.4	2.0	$0.6
Ciudad Camargo	Tamaulipas	Truck	Truck	0.5	$0.1	0.9	$0.4
All Others		Truck/Sea/Air	Truck/Sea/Air	0.6	$0.4	0.3	$0.6
	TOTAL			**21,068.4**	**$5,259.8**	**23,835.9**	**$7,979.3**

Source: Servicio de Información Agroalimentaria y Pesquera (SIAP), SAGARPA, Mexico.
MT = metric tons.

Rail is the dominant mode of entry for U.S. grains, oilseeds and related products entering Mexico, accounting for 14.78 mmt, or 62 percent (figure 3). Most land ports of entry through which U.S. grains are shipped to Mexico have rail access, and products that enter via rail continue on rail upon leaving Mexican Customs. The exceptions are Nuevo Progreso and Reynosa in the state of Tamaulipas. Nuevo Laredo is the largest port of entry and is served by KCSM on the Mexican side of the border and by Union Pacific (UP) and Kansas City Southern on the U.S. side of the border. Piedras Negras is served by Ferromex on the Mexican side of the border and UP on the U.S. side, while Ciudad Juárez is served by Ferromex in Mexico and connects to the UP and BNSF on the U.S. side of the border.

Figure 3. Transportation Modes for U.S. Grains, Oilseeds and Products Exported to Mexico in 2011, Million Metric Tons and Percent of Share



Source: Servicio de Información Agroalimentaria y Pesquera (SIAP), SAGARPA, Mexico

Seaports are the second most dominant mode of entry for U.S. exports to Mexico, accounting for 8.11 mmt, or 34 percent. Based upon information from Mexican rail representatives, at least 42 percent of these imports leave the port area via rail. SIAP/SAGARPA report at least 17 percent leave via truck. The remainder falls in a "rail/truck" combination, continues to another Mexican seaport, or the mode of transportation is not declared. The Port of Progreso has the highest truck movement within Mexico since it does not have a direct rail connection and most of the grain stays in the Yucatán Peninsula for local consumption.

Only about four percent of U.S. exports of grains, oilseeds and related products enter Mexico via truck, and they continue throughout Mexico in trucks. The main port for truck entry is Nuevo Progreso, Tamaulipas, accounting for three-quarters of shipments, while Mexicali accounts for 5.2 percent and Reynosa accounts for 4.3 percent.

U.S. Yellow Corn Exports to Mexico and Modal Shares of Shipment

Yellow corn is one of the most traded grains between the United States and Mexico. The U.S. exported 8.3 mmt of yellow corn to Mexico during 2011, 15 percent above the 7.3 mmt exported in 2010. This grain enters Mexico mainly via rail, accounting for 72 percent entries. Sea entries of U.S. corn into Mexico accounted for 25 percent while trucks accounted for the remaining three percent.

The main ports of entry for this commodity are located on the border with Texas. Nuevo Laredo is the most important port for yellow corn trade with 2.76 mmt; Ciudad Juárez on the border with El Paso is second with 1.77 mmt. The third highest volume port of entry is Veracruz; this seaport registered 1.30 mmt during 2011. Piedras Negras is fourth with 1.15 mmt. The seaport of Progreso is fifth with 329.9 thousand metric tons (tmt) (figure 4). Please note that the circles on Figure 4 and similar maps denote relative magnitudes of volume moving through the port.

Figure 4. Main Ports of Entry for U.S. Yellow Corn Exports to Mexico - 2011

Source: Servicio de Información Agroalimentaria y Pesquera (SIAP), SAGARPA, Mexico

U.S. yellow corn entering Mexico via rail stayed on rail to their final destination while corn entering via truck remained on trucks. Corn entering via seaport was then loaded onto rail

or trucks before continuing to its final destination. This is almost always the case for all U.S. commodities entering Mexico. Detailed data provided by the U.S. rail industry follows.

For rail shipments, Querétaro is the state of destination for the highest volume of yellow corn (1.83 mmt), followed by Jalisco 1.38 mmt, Estado de Mexico with 1.07 mmt, and Durango with 742.4 tmt (table 3). These 4 locations account for about 69 percent of the total U.S. yellow corn exports to Mexico. No other states received more than 374 tmt.

Table 3. 2011 Rail Shipments of U.S. Yellow Corn within Mexico, Metric Tons

	Origin							
Destination	**Mexicali**	**Ciudad Juarez**	**Piedras Negras**	**Nogales**	**Coatzacoalcos**	**Veracruz**	**Nuevo Laredo**	**Total**
Aguascalientes	--	--	3,786	--	--	--	214,035	217,821
Baja California	52,184	--	6,613	--	--	--	--	58,797
Chiapas	--	--	--	--	14,795	3,421	--	18,217
Chihuahua	--	49,546	1,533	--	--	--	--	51,080
Coahuila	--	292,580	52,049	--	--	--	29,165	373,793
Distrito Federal	--			--		17,018	1,520	18,538
Durango	--	480,183	262,193	--	--	--	--	742,376
Estado de Mexico	--		38,741	--	4,581	261,960	767,505	1,072,787
Guanajuato	--	33,212	18,379	--	--	14,078	--	65,670
Hidalgo	--		6,888	547	--	39,692	--	47,127
Jalisco	--	723,747	648,397	--	--	2,073	7,505	1,381,722
Michoacan	--	10,561	--	--	--	--	--	10,561
Morelos	--	--	--	--	--	1,252	--	1,252
Nayarit	272	--	--	--	--	--	--	272
Nuevo Leon	--	--	--	--	--	--	301,815	301,815
Puebla	--	--	--	--	962	314,993	--	315,955
Queretaro	--	104,011	20,906	--	--	--	1,703,445	1,828,362
San Luis Potosi	--	--	--	--	--	--	153,520	153,520
Sinaloa	--	--	--	62,132	--	--	--	62,132
Sonora	--	--	--	136,930	--	--	--	136,930
Tabasco	--	--	--	--	--	3,591	--	3,591
Tamaulipas	--	--	--	--	--	--	9,500	9,500
Tlaxcala	--	--	--	--	4,480	12,751	--	17,232
Veracruz	--	--	--	--	165,115	168,216	35,910	369,241
Total	**52,456**	**1,693,840**	**1,059,487**	**199,609**	**189,935**	**839,046**	**3,223,920**	**7,258,292**

Source: Mexican Rail Industry

The top origin-destination rail transportation pairs can be found in Table 4. Nuevo Laredo-Queretaro moves more than twice as much yellow corn as the second highest pair of Nuevo Laredo-Estado de Mexico. Ciudad Juarez-Jalisco, Piedras Negras-Jalisco, and Ciudad Juarez-Durango complete the top five pairs, which account for 60 percent of the yellow corn trade. The top 16 of the 48 total rail origin-destination pairs account for 92.3 percent of rail shipments.

Table 4. Top Origin-Destination Pairs for Rail Shipments of U.S. Yellow Corn within Mexico, 2011

Origin	Destination	Metric Tons
Nuevo Laredo	Queretaro	1,703,445
Nuevo Laredo	Estado de Mexico	767,505
Ciudad Juarez	Jalisco	723,747
Piedras Negras	Jalisco	648,397
Ciudad Juarez	Durango	480,183
Veracruz	Puebla	314,993
Nuevo Laredo	Nuevo Leon	301,815
Ciudad Juarez	Coahuila	292,580
Piedras Negras	Durango	262,193
Veracruz	Estado de Mexico	261,960
Nuevo Laredo	Aguascalientes	214,035
Veracruz	Veracruz	168,216
Coatzacoalcos	Veracruz	165,115
Nuevo Laredo	San Luis Potosi	153,520
Nogales	Sonora	136,930
Ciudad Juarez	Queretaro	104,011
All Others (32 Additional Pairs)		559,647
Total		**7,258,292**
Source: Mexican Rail Industry		

Uses of U.S. Yellow Corn Exports to Mexico

According to a March 2010 USDA Foreign Agricultural Service report, yellow corn is mainly used to produce cornstarch, cereals, and animal feed in Mexico. About half of yellow corn is used to feed livestock and another quarter or more is used to produce cornstarch. Cereals, while important, account for much of the remainder of yellow corn use in Mexico with some being used for flour and snacks. These proportions are similar to 2004 data reported by SAGARPA, in which 54.1 percent was used for feeding, 36.5 percent for corn starch, and the

remainder for flour, cereals, and snacks. However, SAGARPA no longer reports these data in the same format, so the approximations from 2010 are the most recent data on which to estimate Mexican use of U.S. yellow corn. As a result, it is estimated that about 4.2 mmt of U.S. yellow corn is used as animal feed, 2.1 mmt for corn starch, and the remainder for other uses (table 5).

Table 5. Uses of U.S. Corn Exports to Mexico

Uses	1,000 MT	Percentage
Animal Feeding	4,176.5	50
Corn Starch	2,088.2	25
Other	2,088.2	25
Total	**8,352.9**	**100.0**

Source: Servicio de Información Agroalimentaria y Pesquera (SIAP), SAGARPA, Mexico.

U.S. Soybean Exports to Mexico and Modal Shares of Shipment

The United States exported 3.2 mmt of soybeans to Mexico during 2011, down 10 percent from 3.6 mmt in 2010 (SAGARPA). As with corn, soybeans enter Mexico mainly via rail, accounting for 67.7 percent entries. Sea entries of U.S. corn into Mexico accounted for 31.8 percent while trucks accounted for the remaining half percent. In 2011, the major entry points within Mexico for U.S. soybeans were Piedras Negras with 845.7 tmt, followed by Veracruz (697.8 tmt), Matamoros (643.0 tmt), Ciudad Juárez (380.3 tmt), and Nuevo Laredo (298.8 tmt) (figure 5).

Rail transportation data collected indicates that 2.8 mmt of U.S. soybeans were transported via rail within Mexico in 2011. This amounts to a rail modal share of 89 percent of the total U.S. soybean exported to Mexico in 2011. The remaining 11 percent travel to their final destination via truck. All these exports were crushed into meal and oil in Mexico. The main destinations for U.S. soybeans via rail are Tamaulipas, which accounts for 609.0 tmt, Guanajuato with 458.4 tmt, Hidalgo with 425.1 tmt, Coahuila with 309.4 tmt, and Jalisco with 300.0 tmt (table 6). These top destinations represent 74 percent of the exports.

The top 12 origin-destination rail pairs accounted for 93.5 percent of Mexican rail shipments of U. S. soybeans during 2011 (table 7). The leading pair was Nuevo Laredo-Tamaulipas with 609.0 tmt, or all of the soybean rail shipments which stayed in Tamaulipas. Other leading origin-destination pairs include Piedras Negras-Guanajuato (338.0 tmt), Veracruz-Hidalgo (264.7 tmt), and Nuevo Laredo-Nuevo Leon (234.5 tmt). For rail shipments entering

Figure 5. Main Ports of Entry for U.S. Soybean Exports to Mexico - 2011

Source: Servicio de Información Agroalimentaria y Pesquera (SIAP), SAGARPA, Mexico

Table 6. 2011 Rail Shipments of U.S. Soybeans within Mexico, Metric Tons

	Origin				
Destination	**Ciudad Juarez**	**Piedras Negras**	**Veracruz**	**Nuevo Laredo**	**Total**
Aguascalientes	--	--	--	1,425	1,425
Chihuahua	195	--	--	--	195
Coahuila	95,066	214,401	--	--	309,467
Distrito Federal	--	--	--	190	190
Durango	20,756	83,233	--	--	103,989
Guanajuato	59,958	337,994	--	60,420	458,371
Hidalgo	40,126	119,387	264,678	950	425,141
Jalisco	143,538	156,214	--	--	299,752
Nuevo Leon	--	--	--	234,460	234,460
Puebla	--	--	173,123	--	173,123
San Luis Potosi	--	--	--	1,900	1,900
Tamaulipas	--	--	--	609,045	609,045
Veracruz	--	--	227,569	--	227,569
Total	**359,638**	**911,229**	**665,370**	**908,390**	**2,844,627**

Source: Mexican Rail Industry

Mexico via rail from Laredo into Nuevo Laredo, 93 percent stay in close proximity to their entry, whether staying in Tamaulipas or in neighboring Nuevo Leon, while grain entering through Juarez, Piedras Negras, and Veracruz has a much more diverse distribution throughout Mexico.

Table 7. Top Origin-Destination Pairs for Rail Shipments of U.S. Soybeans within Mexico, 2011

Origin	Destination	Metric Tons
Nuevo Laredo	Tamaulipas	609,045
Piedras Negras	Guanajuato	337,994
Veracruz	Hidalgo	264,678
Nuevo Laredo	Nuevo Leon	234,460
Veracruz	Veracruz	227,569
Piedras Negras	Coahuila	214,401
Veracruz	Puebla	173,123
Piedras Negras	Jalisco	156,214
Ciudad Juarez	Jalisco	143,538
Piedras Negras	Hidalgo	119,387
Ciudad Juarez	Coahuila	95,066
Piedras Negras	Durango	83,233
All Others (10 Additional Pairs)		185,919
Total		**2,844,627**
Source: Mexican Rail Industry		

U.S. Sorghum Exports to Mexico and Modal Shares of Shipment

The United States exported 2.42 mmt of sorghum to Mexico during 2011, 7.5 percent higher than the 2.25 mmt exported in 2010 (SIAP). Most sorghum enters Mexico via seaports, accounting for 56.7 percent entries. Rail entries of U.S. sorghum into Mexico accounted for 22.1 percent while trucks accounted for the remaining 19.7 percent. Most U.S. sorghum exports enter Mexico through the seaport of Veracruz, accounting for 961.7 tmt of sorghum imports during 2011 (figure 6). Nuevo Progreso, across from Progreso, Texas, is the second largest point of entry with 475.9 tmt during 2011 and is the only port of entry to use only truck entries. Other important ports of entry are Ciudad Juárez (300.2 tmt), the seaport of Progreso in Yucatan (262.7 tmt), and Piedras Negras (143.5 tmt).

Figure 6. Main Ports of Entry for U.S. Sorghum Exports to Mexico - 2011

Port of Entry	Weight MT
Veracruz	961,712
Progreso Tam	475,919
Ciudad Juarez	300,194
Progreso Yuc	262,718
Piedras Negras	143,553
Coatzacoalcos	98,964

Source: Servicio de Información Agroalimentaria y Pesquera (SIAP), SAGARPA, Mexico

Sorghum is used exclusively to feed animals in Mexico. According to Mexican rail industry representatives, at least 43.5 percent of U.S. sorghum travels throughout Mexico via rail. Thus, more than half, 56.5 percent, is transported to its final destination within Mexico via truck. Only rail shipments will be discussed here. The top destination for U.S. sorghum exports to Mexico was Puebla, accounting for 464.1 tmt of shipments (table 8). Other leading destinations were Veracruz with 349.9 tmt and Jalisco with 106.8 tmt. Together, these three destinations accounted for 87 percent of U.S. sorghum exports to Mexico transported via rail.

The top nine origin-destination pairs account for 93.2 percent of rail shipments of U.S. sorghum within Mexico. Veracruz-Puebla (464.0 tmt) and Veracruz-Veracruz (144.1 tmt) led the way. Closely behind was Nuevo Laredo-Veracruz with 143.5 tmt. These top three origin-destination pairs accounted for 71 percent of rail shipments.

While truck transport origin-destination pairs are not specifically addressed here, it is important to note that all U.S. sorghum entering Mexico at Nuevo Progreso via truck (475.9 tmt) and Progreso, Yucatan via ocean ship (262.7 tmt) leave both port areas via truck. Further, about 310.4 tmt of sorghum entering through Veracruz is also shipped to its final destination via truck. Truck shipments likely stay in their states of entry or very close by since rail would be more efficient for longer distances.

Table 8. 2011 Rail Shipments of U.S. Sorghum within Mexico, Metric Tons

Destination	Origin					
	Ciudad Juarez	Piedras Negras	Coatzacoalcos	Veracruz	Nuevo Laredo	Total
Aguascalientes	--	--	--	--	4,655	4,655
Chiapas	--	--	--	268	--	268
Chihuahua	180	--	--	--	--	180
Distrito Federal	--	--	--	14,240	665	14,905
Durango	--	--	--	--	4,275	4,275
Estado de Mexico	--	--	--	4,610	29,070	33,680
Guanajuato	--	--	--	2,017	--	2,017
Jalisco	22,334	77,540	--	--	6,935	106,808
Morelos	--	--	--	7,872	--	7,872
Nuevo Leon	--	--	--	--	18,050	18,050
Puebla	--	--	--	463,984	95	464,079
Queretaro	--	--	--	--	11,875	11,875
San Luis Potosi	--	--	--	--	20,710	20,710
Tlaxcala	--	--	--	14,240	--	14,240
Veracruz	--	--	62,243	144,087	143,545	349,874
Total	**22,514**	**77,540**	**62,243**	**651,319**	**239,875**	**1,053,490**

Source: Mexican Rail Industry

Table 9. Top Origin-Destination Pairs for Rail Shipments of U.S. Sorghum within Mexico, 2011

Origin	Destination	Metric Tons
Veracruz	Puebla	463,984
Veracruz	Veracruz	144,087
Nuevo Laredo	Veracruz	143,545
Piedras Negras	Jalisco	77,540
Coatzacoalcos	Veracruz	62,243
Nuevo Laredo	Estado de Mexico	29,070
Ciudad Juarez	Jalisco	22,334
Nuevo Laredo	San Luis Potosi	20,710
Nuevo Laredo	Nuevo Leon	18,050
All Others (13 Additional Pairs)		71,927
Total		**1,053,490**

Source: Mexican Rail Industry

U.S. Hard Wheat Exports to Mexico and Modal Shares of Shipment

The U.S. exported 2.4 mmt of hard wheat to Mexico during 2011, up almost 20 percent from 2.03 mmt in 2010. Seaport entries account for 55.5 percent of U.S. hard wheat exports to Mexico with 44.5 percent entering via rail and negligible amounts entering via truck.

About 42 percent of U.S. wheat exports entered Mexico through the seaport of Veracruz. This port registered an entry of 1.01 mmt of hard wheat during 2011 (figure 7). Veracruz is the largest point of entry, moving twice as much volume as the second largest point of entry. Nuevo Laredo, the second largest port by volume, registered 471.8 tmt. Rounding out the top five during 2011 are Ciudad Juárez with 266.2 tmt, the seaport of Tuxpan with 222.8 tmt, and Piedras Negras with 167.1 tmt.

Figure 7. Main Ports of Entry for U.S. Hard Wheat Exports to Mexico – 2011

Source: Servicio de Información Agroalimentaria y Pesquera (SIAP), SAGARPA, Mexico

Collected data for rail transportation amounted to 3.1 mmt of U.S. wheat exports to Mexico during 2011. This is above the 2.4 mmt reported by SIAP, in large part due to the difference between what SIAP reported for Nuevo Laredo (471.8 tmt) and what the rail industry reported (1.24 mmt). Truck was reported by SIAP as a mode of transportation within Mexico for minimal amounts of U.S. hard wheat, 18.6 tmt in total or about 0.8 percent.

The major entry points for U.S. wheat shipped by rail in this year were Nuevo Laredo at 471.8 tmt (or 1.24 mmt from the rail industry), Ciudad Juárez with 286.2 tmt, and Piedras Negras with 167.1 tmt. Furthermore, the vast majority of the hard wheat shipped from the seaports was shipped via rail.

The leading destination for U.S. hard wheat shipped by rail within Mexico was the city of Mexico City (D.F.), with 619.5 tmt, followed closely by the Estado de Mexico with 604.4 tmt (table 10). The third largest destination was state of Puebla with a total quantity of 468.9 tmt, which was followed by Nuevo Leon at 380.6 tmt and Veracruz at 146.2 tmt. The top origin-destination pairs were Nuevo Laredo-Estado of Mexico, Veracruz-Puebla, Nuevo Laredo-Nuevo Leon, and Veracruz-Mexico City, and Nuevo Laredo-Mexico City (table 11). These five pairs accounted for over sixty percent of rail shipments of U.S. wheat within Mexico, and the top 14 accounted for 85.3 percent.

Table 10. 2011 Rail Shipments of U.S. Hard Wheat within Mexico, Metric Tons

	Origin							
Destination	**Mexicali**	**Ciudad Juarez**	**Piedras Negras**	**Nogales**	**Coatzacoalcos**	**Veracruz**	**Nuevo Laredo**	**Total**
Aguascalientes	--	--	--	--	--	21,310	22,420	43,730
Baja California	12,893	--	1,105	--	--	--	--	13,998
Campeche	--	--		--	2,898	7,083	--	9,981
Chiapas	--	--		--	7,303	32,043	--	39,345
Chihuahua	--	48,134		--	--	--	--	48,134
Coahuila	--	8,692	90,630	--	--	--	--	99,322
Distrito Federal	--	7,904		--	--	358,644	252,985	619,533
Durango	--	31,109	3,622	--	--		2,375	37,106
Estado de Mexico	--	45,427		--	--	81,643	477,375	604,445
Guanajuato	--	30,688	31,121	--	--	80,355	11,970	154,134
Jalisco	--	84,813	71,796	--	--	79,640	--	236,250
Michoacan	--	--	34,043	--	--	2,957	--	36,999
Nuevo Leon	--	1,505	3,632	--	--	--	375,440	380,577
Puebla	--	7,490	8,966	--	--	447,563	4,845	468,864
Queretaro	--	--	--	--	--	4,039	34,295	38,334
Sonora	--	--	9,782	82,987	--	--	--	92,770
Tlaxcala	--	--	--	--	--	14,939	--	14,939
Veracruz	--	--	--	--	--	84,627	61,560	146,187
Total	**12,893**	**265,762**	**254,697**	**82,987**	**10,200**	**1,214,843**	**1,243,265**	**3,084,648**

Source: Mexican Rail Industry; Note: Veracruz includes the Port of Tuxpan

Table 11. Top Origin-Destination Pairs for Rail Shipments of U.S. Hard Wheat within Mexico, 2011

Origin	Destination	Metric Tons
Nuevo Laredo	Estado de Mexico	477,375
Veracruz	Puebla	447,563
Nuevo Laredo	Nuevo Leon	375,440
Veracruz	Distrito Federal	358,644
Nuevo Laredo	Distrito Federal	252,985
Piedras Negras	Coahuila	90,630
Ciudad Juarez	Jalisco	84,813
Veracruz	Veracruz	84,627
Nogales	Sonora	82,987
Veracruz	Estado de Mexico	81,643
Veracruz	Guanajuato	80,355
Veracruz	Jalisco	79,640
Piedras Negras	Jalisco	71,796
Nuevo Laredo	Veracruz	61,560
All Others (29 Additional Pairs)		454,590
Total		**3,084,648**
Source: Mexican Rail Industry		

Uses of U.S. Wheat Exports to Mexico

As it is with nearly all wheat in Mexico, U.S. wheat exports to Mexico are used almost exclusively for human consumption in Mexico. Foreign Agricultural Service reported no more than eight percent is used for feed. If that holds for U.S. wheat in Mexico, then Table 12 shows that 2.24 mmt was used for human consumption while 194.6 tmt was used to feed animals.

Table 12. Uses of U.S. Wheat Exports to Mexico

Uses	1,000 MT	Percentage
Human Consumption	2,237.3	92
Animal Feeding	194.6	8
Total	**2,431.9**	**100**

Source: Foreign Agricultural Service, USDA

U.S. Rice Exports to Mexico and Modal Shares of Shipment

The United States exported 808.8 tmt of paddy rice (unmilled) to Mexico during 2011. Nearly three-quarters of U.S. paddy rice exports to Mexico, 72.5 percent, entered via seaports while 27.5 percent entered via rail. Only 49 mt entered via truck.

The largest port of entry for U.S. paddy rice exports to Mexico was the Port of Veracruz with 560.6 tmt, or 69 percent of total imports (table 13). Nuevo Laredo was the only other significant Mexican port for rice imports with 176.0 tmt. All rice is used for human consumption.

Table 13. Main Ports of Entry for U.S. Paddy Rice Exports to Mexico – 2011

Port of Entry	Metric Tons
Veracruz	560,565
Nuevo Laredo	175,992
Piedras Negras	39,775
Coatzacoalcos	24,982
Ciudad Juarez	6,707
Others	49
Total	**808,770**

Source: Servicio de Información Agroalimentaria y Pesquera (SIAP), SAGARPA, Mexico.

There was also 113.6 tmt of milled U.S. rice exported to Mexico. Thus, a total of 922.4 tmt of U.S. rice was exported to Mexico in 2011. Nuevo Laredo (43.1 tmt), Piedras Negras (32.1 tmt) and Mexicali (12.3 tmt) accounted for the bulk of these milled rice shipments.

Rail shipments of rice within Mexico account for 749.7 tmt of U.S. exports. This likely includes both paddy rice and milled rice exports shipped within Mexico by rail. Therefore, 81.3 percent of total U.S. rice exports to Mexico continued to their final destination via rail while the remaining 18.7 percent were transported via truck. The leading Mexican destination for U.S. rice was Veracruz with a total quantity of 257.5 tmt (table 14). The second largest destination was Nuevo Leon with 177.0 tmt, followed by the Estado de Mexico with 109.0 tmt and Guanajuato with 94.3 tmt.

The top origin-destination pair for paddy rice rail shipments was Veracruz-Veracruz, with 244.5 tmt, followed by Nuevo Laredo-Nuevo Leon (177.0 tmt), Veracruz-Estado de Mexico (85.6 tmt), and Veracruz-Puebla (81.0 tmt) (table 15). The top seven origin-destination pairs account for 93.5 percent of rail shipments of U.S. rice within Mexico.

Table 14. 2011 Rail Shipments of U.S. Rice within Mexico, Metric Tons

Destination	Origin						
	Mexicali	Ciudad Juarez	Piedras Negras	Coatzacoalcos	Veracruz	Nuevo Laredo	Total
Baja California	917	--	--	--	--	--	917
Chihuahua	--	279	--	--	--	--	279
Coahuila	--	--	4,213	--	--	--	4,213
Colima	--	--	1,354	--	--	--	1,354
Durango	--	--	3,646	--	--	--	3,646
Estado De Mexico	--	--	181	4,756	85,592	18,450	108,979
Guanajuato	--	--	57,423	--	36,881	--	94,304
Jalisco	--	--	2,909	--	--	--	2,909
Nuevo Leon	--	--	--	--	--	177,030	177,030
Puebla	--	--	--	--	80,960	--	80,960
Sinaloa	--	6,661	80	--	--	--	6,741
Tabasco	--	--	--	--	8,631	--	8,631
Veracruz	--	--	--	8,435	244,517	4,500	257,452
Yucatan	--	--	--	--	--	2,250	2,250
Total	**917**	**6,940**	**69,807**	**13,191**	**456,581**	**202,230**	**749,666**

Source: Mexican Rail Industry

Table 15. Top Origin-Destination Pairs for Rail Shipments of U.S. Rice within Mexico, 2011

Origin	Destination	Metric Tons
Veracruz	Veracruz	244,517
Nuevo Laredo	Nuevo Leon	177,030
Veracruz	Estado de Mexico	85,592
Veracruz	Puebla	80,960
Piedras Negras	Guanajuato	57,423
Veracruz	Guanajuato	36,881
Nuevo Laredo	Estado de Mexico	18,450
Others (14 Additional Pairs)		48,813
Total		**749,666**

Source: Mexican Rail Industry

U.S. Dried Distiller's Grain Exports to Mexico and Modal Shares of Shipment

During 2011, the United States exported 1.81 mmt of dried distillers grain (DDG) made from corn, up 13 percent from the 1.61 mmt exported in 2010. DDG are mainly transported to Mexico as well as within Mexico by rail, accounting for 88.4 percent of all shipments, while eleven percent enter via seaport and less than one percent via truck. The main port of entry is Piedras Negras with a registered entry of 555.5 tmt of DDG in 2011. The second largest point of entry is Nuevo Laredo with 454.5 tmt, followed by Ciudad Juárez, across the border from El Paso, with 371.6 tmt of DDG (figure 8). Nogales, Matamoros, and the seaport of Progreso were also important points of entry for U.S. DDG. DDG are used to feed livestock in Mexico.

Figure 8. Main Ports of Entry for U.S. DDG from Corn Exports to Mexico - 2011

Port of Entry	Weight MT
Piedras Negras	555,524
Nuevo Laredo	454,578
Ciudad Juarez	371,582
Nogales	99,150
Matamoros	81,534
Progreso	75,751
Veracruz	61,949
Coatzacoalcos	54,753

Source: Servicio de Información Agroalimentaria y Pesquera (SIAP), SAGARPA, Mexico

According to Mexican rail industry representatives, at least 1.53 mmt of U.S. DDG, or 84.5 percent, were shipped via rail within Mexico during 2011. The main destination was Jalisco with 668.5 tmt. This destination is by far the biggest, representing 37 percent of the total DDG exported to Mexico (table 16). Nuevo Leon, with 156.4 tmt and Durango with 140.7 tmt were the second and third largest destinations within Mexico for U.S. DDG. Tamaulipas, Queretaro, and Puebla are also important destinations.

Table 16. 2011 Rail Shipments of U.S. DDG within Mexico, Metric Tons

Destination	Origin					
	Mexicali	Ciudad Juarez	Piedras Negras	Nogales	Nuevo Laredo	Total
Aguascalientes	--	--	--	--	37,430	37,430
Baja California	6,890	--	253	--	--	7,144
Chihuahua	--	18,497	1,339	--	--	19,836
Coahuila	--	--	10,176	--	--	10,176
Distrito Federal	--	--		--	8,455	8,455
Durango	--	20,290	120,202	--	190	140,682
Estado de Mexico	--	--		--	43,225	43,225
Guanajuato	--	4,089	12,993	--	31,065	48,147
Jalisco	--	305,542	358,642	--	4,275	668,460
Michoacan	--	9,159	25,674	--	--	34,833
Nuevo Leon	--	--	--	--	156,370	156,370
Puebla	--	--	1,488	--	49,780	51,268
Queretaro	--	--	4,356	--	66,120	70,476
San Luis Potosi	--	--	--	--	29,640	29,640
Sinaloa	--	--	1,472	53,716	--	55,188
Sonora	--	--	1,027	38,879	--	39,906
Tamaulipas	--	--	--	--	90,820	90,820
Tlaxcala	--	--	--	--	5,320	5,320
Veracruz	--	--	--	--	9,975	9,975
Total	**6,890**	**357,578**	**537,622**	**92,595**	**532,665**	**1,527,351**

Source: Mexican Rail Industry

Piedras Negras-Jalisco, Juarez-Jalisco, Nuevo Laredo-Nuevo Leon, and Piedras Negras-Durango were the most common origin-destination pairs for rail shipments of U.S. DDG within Mexico (table 17). Together, these four pairs account for 62 percent of all such rail shipments while the top twelve origin-destination pairs account for nearly ninety percent of rail shipments of DDG in Mexico.

Table 17. Top Origin-Destination Pairs for Rail Shipments of U.S. DDG within Mexico, 2011

Origin	Destination	Metric Tons
Piedras Negras	Jalisco	358,642
Ciudad Juarez	Jalisco	305,542
Nuevo Laredo	Nuevo Leon	156,370
Piedras Negras	Durango	120,202
Nuevo Laredo	Tamaulipas	90,820
Nuevo Laredo	Queretaro	66,120
Nogales	Sinaloa	53,716
Nuevo Laredo	Puebla	49,780
Nuevo Laredo	Estado de Mexico	43,225
Nogales	Sonora	38,879
Nuevo Laredo	Aguascalientes	37,430
Nuevo Laredo	Guanajuato	31,065
Others (20 Additional Pairs)		157,560
Total		**1,527,351**
Source: Mexican Rail Industry		

U.S. Soybean Meal Exports to Mexico and Modal Shares of Shipment

The United States exported 1.17 mmt of soybean meal to Mexico during 2011, up 30 percent from the 897.2 tmt in 2010. Nearly all of these soybean meal exports, 95.9 percent, enter Mexico via rail, while a little over three percent enter by seaport and just 0.2 percent enters on trucks. Three major entry points for U.S. soybean meal shipped to Mexico accounted for more than 90 percent of the total, with Piedras Negras capturing 44 percent of the total or 518.2 tmt, followed by Nogales with 335.1 tmt (29 percent), and Nuevo Laredo with 219.7 tmt (19 percent) (table 18). Coatzacoalcos and Juarez are also important entry points for U.S. soybean meal into Mexico. Soybean meal is used to feed livestock in Mexico.

Table 18. Main Ports of Entry for U.S. Soybean Meal Exports to Mexico – 2011

Port of Entry	Metric Tons
Piedras Negras	518,261
Nogales	335,095
Nuevo Laredo	219,729
Coatzacoalcos	45,865
Ciudad Juarez	36,028
Others	17,613
Total	**1,172,592**

Source: Servicio de Información Agroalimentaria y Pesquera (SIAP), SAGARPA, Mexico.

Rail shipments accounted for the vast majority of the intra-Mexican shipments of U.S. soybean meal exported in 2011 as all soybean meal entering by rail and seaport continue on rail to their final destination. Table 19 shows a total of 1.38 mmt of U.S. soybean meal shipped by rail throughout Mexico. There are two possible reasons for this. The first is that Nuevo Laredo data includes soybean crude oil. The second is that some of this volume is soybean meal processed from U.S. soybeans shipped to Mexico. As a result, rail industry representatives report about 205 tmt more in soybean meal shipments than show up in official SIAP numbers

The leading destination for U.S. soybean meal was the state of Jalisco with 358.4 tmt, followed by Sonora with 275.6 tmt, Durango with 112.9 tmt, and Sinaloa with 104.3 tmt (table 19). These four destinations account for 62 percent of U.S. soybean meal transported by rail within Mexico. Meanwhile, truck transportation of soybean meal is minimal at 1.8 tmt

Table 19. 2011 Rail Shipments of U.S. Soybean Meal within Mexico, Metric Tons

	Origin						
Destination	**Mexicali**	**Ciudad Juarez**	**Piedras Negras**	**Nogales**	**Coatzacoalcos**	**Nuevo Laredo**	**Total**
Aguascalientes	--	--	20,134	--	--	63,650	83,784
Baja California	8,562	--		--	--	--	8,562
Chihuahua	--	28,093	809	--	--	--	28,902
Coahuila	573	--	30,865	--	--	8,170	39,607
Distrito Federal	--	--		--	--	5,795	5,795
Durango	--	--	112,915	--	--	--	112,915
Estado de Mexico	--	--		--	--	3,420	3,420
Guanajuato	--	--	11,204	--	--	--	11,204
Jalisco	--	--	358,068	374	--	--	358,442
Michoacan	--	--	21,219	--	--	--	21,219
Nayarit	--	--	11,492	--	--	--	11,492
Nuevo Leon	--	--	568	--	--	65,645	66,213
Puebla	--	--		--	--	11,780	11,780
Queretaro	--	--	18,023	--	--	66,975	84,998
San Luis Potosi	--	--		--	--	45,220	45,220
Sinaloa	--	--	7,432	96,861	--	--	104,293
Sonora	--	--	8,785	266,830	--	--	275,615
Tamaulipas	--	--	--	--	--	6,935	6,935
Veracruz	--	--	--	--	2,895	93,860	96,755
Total	9,135	28,093	601,513	364,065	2,895	371,450	**1,377,151**
Source: Mexican Rail Industry							

The top origin-destination rail pairs for soybean meal within Mexico are Piedras Negras-Jalisco, Nogales-Sonora, Piedras Negras-Durango, Nogales-Sinaloa, and Nuevo Laredo-Veracruz, accounting for two-thirds of shipments (table 20). The top fourteen destinations account for nearly 94 percent of these soybean meal shipments in Mexico.

Table 20. Top Origin-Destination Pairs for Rail Shipments of U.S. Soybean Meal within Mexico, 2011

Origin	Destination	Metric Tons
Piedras Negras	Jalisco	358,068
Nogales	Sonora	266,830
Piedras Negras	Durango	112,915
Nogales	Sinaloa	96,861
Nuevo Laredo	Veracruz	93,860
Nuevo Laredo	Queretaro	66,975
Nuevo Laredo	Nuevo Leon	65,645
Nuevo Laredo	Aguascalientes	63,650
Nuevo Laredo	San Luis Potosi	45,220
Piedras Negras	Coahuila	30,865
Ciudad Juarez	Chihuahua	28,093
Piedras Negras	Michoacan	21,219
Piedras Negras	Aguascalientes	20,134
Piedras Negras	Queretaro	18,023
Others (15 Additional Pairs)		88,793
Total		**1,377,151**
Source: Mexican Rail Industry		

U.S. High Fructose Corn Syrup Exports to Mexico and Modal Shares of Shipment

The United States exported 1.42 mmt of high fructose corn syrup (HFCS) to Mexico during 2011, up from 1.18 mmt in 2010. Eighty-seven percent enters Mexico via rail while 11.2 percent enter on trucks and 2.1 percent by seaport. The major entry points for U.S. HFCS exports were Piedras Negras with 626.5 tmt, Nuevo Laredo/Laredo with 458.3 tmt, and the port of Coatzacoalcos with 137.5 tmt or 10 percent of the total imports. These three destinations accounted for nearly 90 percent of U.S. HFCS shipments during 2011 (table 15). HFCS is used as an ingredient in processed food and beverage products.

Table 21. Main Ports of Entry for U.S. HFCS Exports to Mexico – 2011

Port of Entry	Metric Tons
Piedras Negras	626,493
Nuevo Laredo	458,251
Coatzacoalcos	137,546
Others	198,091
Total	**1,420,380**

Source: Servicio de Información Agroalimentaria y Pesquera (SIAP), SAGARPA, Mexico.

About 1.26 mmt, 89 percent, of U.S. HFCS exported to Mexico was transported within Mexico via rail. However, only about half of these shipments, or 621.4 tmt, can be accounted for in terms of origin-destination pairs since only one of the rail lines provided HFCS shipment data. With Nuevo Laredo as the origin, Guanajuato received 380.4 tmt of HFCS, followed by Hidalgo (106.1 tmt), Nuevo Leon (97.3 tmt), and Queretaro (30.0 tmt) (table 22). Also, these data exceed the SIAP reported totals from Nuevo Laredo. Attempts to reconcile these differences were unsuccessful.

Table 22. 2011 Rail Shipments of U.S. HFCS within Mexico, Metric Tons

	Origin
Destination	**Nuevo Laredo**
Guanajuato	380,430
Higalgo	106,110
Nuevo Leon	97,290
Queretaro	29,970
Jalisco	5,310
Yucatan	2,250
Total	**621,360**
Source: Mexican Rail Industry	

Selected Other Products Exports to Mexico and Modal Shares of Shipment

Soybean Oil, Canola Meal, Popcorn, and Sunflower Seeds

During 2011, the United States exported 335.7 tmt of soybean oil to Mexico, 35.9 tmt of canola meal, 54.2 tmt of corn for popcorn, and 9.3 tmt of sunflower seeds. Nuevo Laredo was the main port of entry for soybean oil, mostly in crude form, followed by Juarez and Veracruz (table 23). Piedras Negras was the leading entry point for canola meal, Juarez

and Nuevo Laredo were the leading entry points for popcorn, and Piedras Negras was the leading entry point for sunflower seeds.

Table 23. 2011 Main Ports of Entry for Selected U.S. Exports to Mexico, Metric Tons

Port of Entry	Soybean Oil	Canola Meal	Popcorn	Sunflower Seed
Ciudad Juarez	34,267	7,184	23,736	757
Nuevo Laredo	257,373	445	14,040	1,522
Matamoros	--	--	5,833	176
Mexicali	83	--	979	102
Piedras Negras	19,168	24,130	8,490	6,642
Rio Grande City	--	--	879	--
Tijuana	712	3,604	233	95
Veracruz	23,843	--	--	--
Other	187	526	39	28
Total	**335,633**	**35,889**	**54,229**	**9,322**
Source: SAGARPA/SIAP				

Rail was the primary mode of shipment for these products as they entered Mexico – 92.4 percent for soybean oil, 99.4 percent for canola meal, 86.9 percent for popcorn, and 89.3 percent for sunflower seed. Seaport entry was the secondary entry mode for soybean oil, accounting for 7.1 percent of shipments, while truck was the mode for 13.1 percent of popcorn entries and 10.7 percent of sunflower seed entries.

These product categories were shipped primarily via rail within Mexico. However, not all rail industry representatives provided data, with only Juarez and Piedras Negras being the only two origins for which data were provided. Hidalgo and Jalisco were the largest destinations for soybean oil (table 24). Hidalgo was served by both Juarez and Piedras Negras while most rail shipments to Jalisco originated in Juarez.

Canola meal rail shipments to Chihuahua were mainly transported through Juarez while shipments to Jalisco were shipped via Piedras Negras. Juarez and Piedras Negras were both major origination points for popcorn to Mexico City and Guanajuato. Piedras Negras was most important for sunflower seeds, with most going to Mexico City, Guanajuato, and Jalisco.

Soybean oil is used mainly in cooking, particularly in the Hotels, Restaurants, and Institutions (HRI), while sunflower seeds are crushed into oil and used in the production of

fried snack foods. Popcorn is eaten as a snack while canola meal is fed to animals, mostly swine.

Table 24. 2011 Rail Shipments of Selected U.S. Products within Mexico, MT

Soybean Oil	**Origin**		
Destination	**Ciudad Juarez**	**Piedras Negras**	**Total**
Estado de Mexico	4,039	758	4,797
Guanajuato	--	305	305
Hidalgo	11,420	18,820	30,240
Jalisco	15,743	2,059	17,802
Nuevo Leon	--	591	591
Sonora	--	--	86
Soybean Oil Total	**31,202**	**22,533**	**53,821**
Canola Meal	**Origin**		
Destination	**Ciudad Juarez**	**Piedras Negras**	**Total**
Chihuahua	4,901	168	5,069
Coahuila	--	166	166
Jalisco	--	7,791	7,791
Canola Meal Total	**4,901**	**8,125**	**13,027**
Popcorn	**Origin**		
Destination	**Ciudad Juarez**	**Piedras Negras**	**Total**
Distrito Federal	8,797	4,768	13,565
Estado de Mexico	163	652	815
Guanajuato	11,886	2,988	14,874
Jalisco	423	173	596
Puebla	--	228	228
Popcorn Total	**21,269**	**8,809**	**30,078**
Sunflower Seed	**Origin**		
Destination	**Ciudad Juarez**	**Piedras Negras**	**Total**
Coahuila	--	84	84
Distrito Federal	57	2,970	3,027
Estado de Mexico	91	94	186
Guanajuato	--	1,572	1,572
Hidalgo	--	84	84
Jalisco	--	932	932
Puebla	269	436	704
Queretaro	--	571	571
Zacatecas	--	95	95
Sunflower Seed Total	**417**	**6,839**	**7,256**

Source: Mexican Rail Industry

Soft Wheat and White Corn

The United States exported 969.6 tmt of soft wheat to Mexico during 2011. In contrast to other grains exported to Mexico, most of the soft wheat enters Mexico via ocean through ports in the Gulf of Mexico. Seaports account for the vast majority of U.S. soft wheat, 88.8 percent, entering Mexico. The leading port of entry was Veracruz with 569.1 tmt, or 69 percent of the total, followed by the seaport of Progreso with 117.7 tmt percent and the seaport of Tuxpan with 107.1 tmt (table 25). The leading land port was Nuevo Laredo at 57.4 tmt, or 6 percent.

Table 25. Main Ports of Entry for U.S. Soft Wheat Exports to Mexico – 2011

Port of Entry	Metric Tons
Veracruz	569,142
Progreso	117,672
Tuxpan	107,120
Nuevo Laredo	57,366
Others	118,280
Total	**969,580**

Source: Servicio de Información Agroalimentaria y Pesquera (SIAP), SAGARPA, Mexico.

The United States exported 588.9 tmt of white corn to Mexico during 2011, with 168.5 tmt or 29 percent entering Mexico through the port of Veracruz (table 23). The next largest points of entry include Nuevo Laredo, with 78.3 tmt, Matamoros (60.8 tmt), and Progreso (59.7 tmt). About half of total U.S. white corn exports to Mexico entered via seaports with most of the rest entering by rail. No origin-destination information was available for U.S. soft wheat or white corn exports to Mexico.

Table 26. Main Ports of Entry for U.S. White Corn Exports to Mexico – 2011

Ports of Entry	Metric Tons
Veracruz	168,488
Nuevo Laredo	78,287
Matamoros	60,800
Progreso	59,702
Altamira	53,182
Coatzacolacos	52,794
Others	115,710
Total	**588,963**

Source: Servicio de Información Agroalimentaria y Pesquera (SIAP), SAGARPA, Mexico.

Virtually all soft wheat and white corn is milled into flour which is then used for human consumption in Mexico. And even though most is shipped via rail within Mexico, no rail data was provided by the industry.

Conclusion

The United States has had a long relationship with Mexico in the trade of agricultural products. This relationship was spurred along by the implementation of the North American Free Trade Agreement (NAFTA). One impact of NAFTA has been that U.S. grain, oilseed, and related product exports to Mexico continue to grow in terms of both value and volume. The results of this study illustrate the growth in that trade.

The destination, mode of transportation and end uses of U.S. grains, oilseeds, and related products within the Mexican market were specifically reviewed by this project. Yellow corn, used mostly for animal feed and corn starch, is the largest volume export of these products analyzed in this report. Soybeans, crushed for meal and oil, hard wheat, used for human consumption, and grain sorghum, used for animal feeding, were the next largest U.S. exports. Together, these top four products accounted for nearly seventy percent of the volume of U.S. grain and oilseeds exports to Mexico.

Other important products are dried distiller grain (DDG) and soybean meal, used to feed livestock, high fructose corn syrup (HFCS), used as an ingredient in process food and beverage products, and soft wheat and rice, used almost exclusively for human consumption. Most of these major products exported to Mexico have a long history of presence in the market; however, the emergence of DDG, HFCS, and soybean meal is relatively recent.

Four ports of entry handled nearly eighty percent of the total U.S. grain exports by volume in 2011: Nuevo Laredo, Veracruz, Piedras Negras and Ciudad Juárez. The seaports of Progreso in Yucatan and Coatzacoalcos, as well as the land ports of Matamoros, Nogales, and Nuevo Progreso in Tamaulipas are also important gateways.

Rail is the dominant mode of transportation for U.S. exports of these products entry into Mexico and captures an even larger share of product movement within Mexico. With the help of representatives of the two major Mexican rail companies: Ferromex/Ferrosur and Kansas City Southern de Mexico, it was determined that the largest rail origin-destination pairs, those with at least a million metric tons, include Nuevo Laredo-Queretaro, Piedras Negras-Jalisco, Veracruz-Puebla, Nuevo Laredo-Nuevo Leon, Nuevo Laredo-Estado de Mexico, and Ciudad Juárez-

Jalisco. These six origin-destination pairs account for nearly forty percent of U.S. grains, oilseeds, and related product exports to Mexico.

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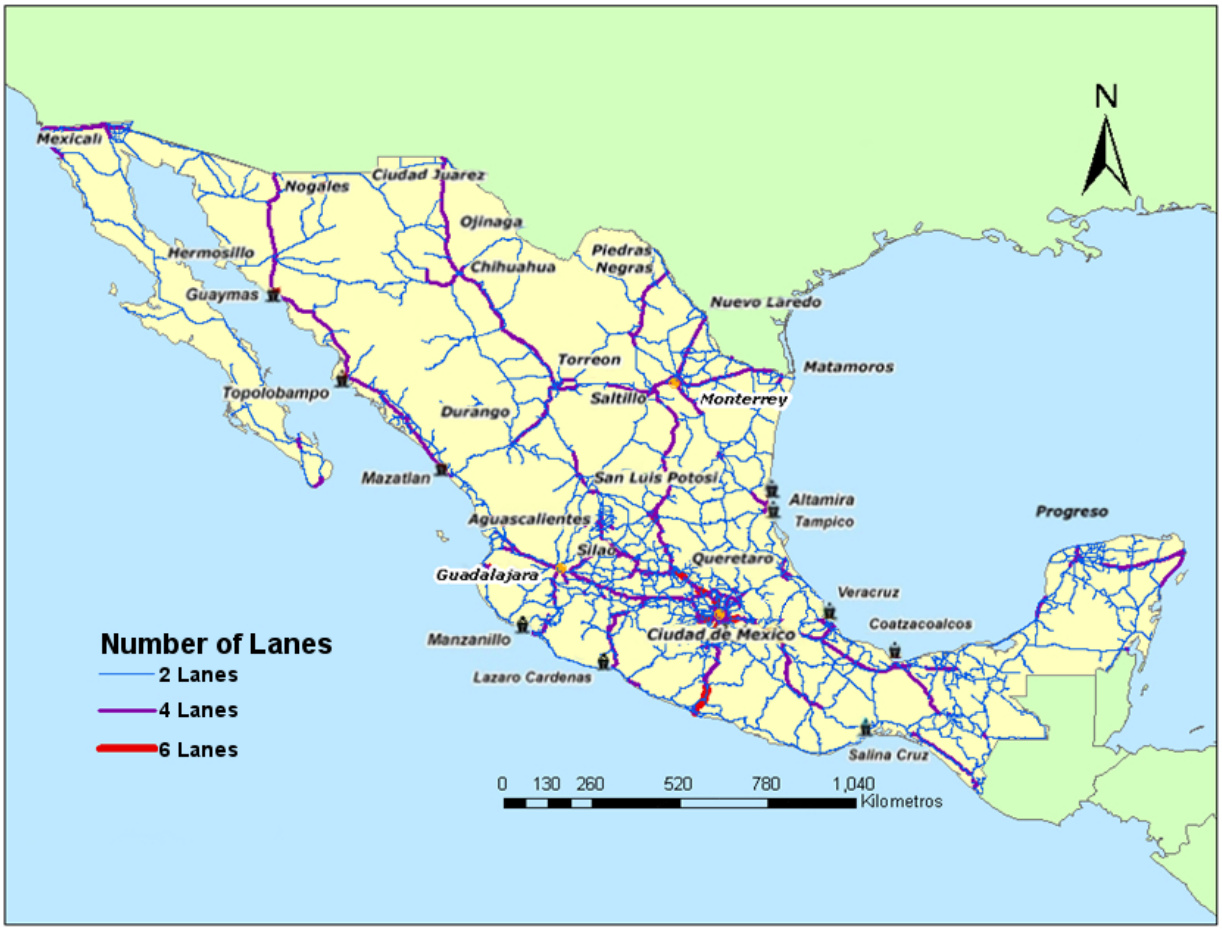
Appendix A

Map of Mexico Highway System



Map Generated by Texas A&M Transportation Institute

Appendix B

Map of Mexico by State

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