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# Opportunities for Making U.S.-Mexico Agricultural Trade More Agile

Steven Zahniser, Adriana Herrera Moreno, Arturo Calderón Ruanova, Sahar Angadjivand, Francisco Javier Calderón Elizalde, Linda Calvin, César López Amador, Nicolas Fernández López López, and Jorge Alberto Valdes Ramos





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## Abstract

This report explores ways to facilitate further growth in U.S.-Mexico agricultural trade by focusing on the border processes and procedures that govern this trade. To solicit ideas on this topic, about 80 informal interviews were conducted with people from the private sector, government, and academia in the United States and Mexico who are familiar with bilateral agricultural trade and border regulations. Based on information collected during these interviews and supplemental information drawn from publicly available information, six areas of opportunity were identified for making U.S.-Mexico agricultural trade more agile: attention to agriculture-related aspects of border crossings and inspections; pre-clearance and pre-inspection systems and joint inspection facilities; further development of risk-based inspection systems; advance preparations for new transportation facilities and new shipment routes; complementary activities for Single Window Environments; and creation of formal avenues for regulatory innovation.

Keywords: Mexico, United States, trade, border, regulations, NAFTA.

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## What Is the Issue?

With full implementation of the North American Free Trade Agreement (NAFTA), Mexico and the United States must look to means other than tariff and quota elimination if they are to foster further growth in bilateral agricultural trade. Improving border infrastructure is one approach to this challenge, but this approach requires a substantial investment of time and money. An alternative approach is to modify border processes and procedures in ways that make U.S.-Mexico agricultural trade more agile—thereby allowing agricultural products to cross the border more quickly, easily, and efficiently—without compromising governmental standards with respect to food safety, sanitary and phytosanitary conditions, and other regulatory matters.

## What Did the Study Find?

The border crossing and inspection process is a critical control point in the shipment of agricultural goods. Problems at this juncture can impede the flow of agricultural trade, leading to higher transaction costs, slower transit times, and even outright losses of product due to spoilage or slippage. Based on information collected in informal interviews and supplemental information drawn from public available sources, and keeping in mind the regulatory responsibilities of the two governments, the research team identified six possible categories of opportunities for making U.S.-Mexico agricultural trade more agile.

- **Agriculture-related aspects of border crossings and inspections.** Respondents emphasized that both government and the private sector have roles in making the border work. Government must be able to conduct inspections consistently, both over time and at different ports of entry, to discourage port-shopping by shippers and to ensure meaningful inspections. Inconsistency could be addressed by direct supervision of inspectors and product-specific training. Personnel must have the specialized knowledge and skills—such as identification of insects, collection and testing of samples, and familiarity with all agricultural product standards—for carrying out inspections. The private sector, in turn, requires complete and accurate documentation about the products it trades from one country to the other. Such documentation is indispensable to passing inspection, the functioning of risk-based screening tools, and investigating outbreaks of foodborne illnesses. In addition, the private sector must ensure that traded agricultural products remain in optimal condition from origin to destination. These tasks fall to individual firms, but one firm’s problems can hamstring other firms. Refresher courses for agricultural exporters on how to comply with U.S. and Mexican regulatory requirements could generate benefits for all trade participants.
- **Pre-clearance and pre-inspection systems and joint inspection facilities.** The design of U.S. and Mexican inspection operations already reflects creative approaches to locating some aspects of the inspection process away from the border. One of the more ambitious facilities with this design—and one that may become a model for similar facilities elsewhere—is a joint inspection facility in Tijuana, Baja California, adjacent to the U.S. port of entry in Otay

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Mesa. In January 2016, the U.S. and Mexican Governments launched a 180-day pilot operation of this facility for the pre-inspection of low-risk, high-volume fruit and vegetable imports from Mexico. Examples that have been in place longer include Mexico's pre-clearance of produce imports from the United States at private-sector concessions located on the U.S. side of the border and U.S. pre-clearance of irradiated mangoes from Mexico. Pre-inspection could be extended to the inspection of Mexican trucks and semi-tractor trailers used in short-haul, cross-border trucking, some respondents thought.

- **Further development of risk-based inspection systems.** In a risk-based inspection system, the allocation of resources to specific inspection activities, including the type and frequency of inspections, is guided by an assessment of the likelihood and severity of the risks associated with the products subject to inspection. Examples of such systems include: the National Agriculture Release Program (NARP) operated by USDA's Animal and Plant Health Inspection Service (APHIS) and U.S. Customs and Border Protection (CBP); the Predictive Risk-based Evaluation for Dynamic Import Compliance Targeting (PREDICT), operated by the U.S. Food and Drug Administration (FDA); and the Integral System of the Inspection Service (SISI) and Trusted User (UCON) program, both operated by Mexico's National Service of Agri-Alimentary Health, Safety, and Quality (SENASICA).
- **Advance preparations for new transportation facilities and new shipment routes.** The construction of new transportation infrastructure and the development of new inland shipping routes can lead to disproportionate growth of U.S.-Mexico agricultural trade across ports of entry, affecting the demand for inspection services. Completion of a new toll road linking the Mexican cities of Culiacán and Durango and faster growth in fruit and vegetable production in central and eastern Mexico than in western Mexico have led to a larger share of produce imports from Mexico entering through the ports of entry in Laredo and Weslaco, Texas. Emerging trade patterns can be anticipated by the U.S. and Mexican Governments as they adapt their border operations to changing economic conditions. Respondents felt that the two Governments could work in advance to develop the logistics and inspection protocols needed at the new facilities and to prepare for possible shifts in trade volumes across ports of entry.
- **Complementary activities for Single Window Environments.** Both Mexico and the United States have created Single Window Environments—electronic systems that allow parties involved in international trade to enter all the information needed to satisfy import, export, and transit-related regulatory requirements at a single point. Some respondents suggested that the two Governments could use these systems as platforms for streamlining and simplifying the administrative requirements for bilateral agricultural trade. This effort could include not only the completion of ongoing projects for instituting electronic certificates for the full range of agricultural products, but also the consolidation or elimination of some types of documents and increasing the period of validity for certain documents. Electronic certificates (E-certs, for short) are electronic versions of veterinary inspection certificates, phytosanitary certificates, and similar documents that formerly were issued only in paper form.
- **Creation of formal avenues for regulatory innovation.** Formal avenues for innovative feedback on regulatory processes would help to enact many of the ideas proposed in interviews for making U.S.-Mexico agricultural trade more agile. For example, many interviewees suggested that there are opportunities to reduce the time required to sample and test agricultural shipments, chiefly by locating labs closer to the border. Already, the FDA has several mobile labs and deploys them at ports such as Nogales during peak import seasons, and the Mexican Government uses mobile labs to analyze pathogenic microorganisms and toxic residues. Aligning border facility hours more closely with the private sector's operating hours would be welcomed by interview participants, some of whom envision a border that is open to agricultural trade 24 hours a day, 7 days a week—a measure not without tradeoffs in costs, staffing, and quality of inspections.

## How Was the Study Conducted?

The research team conducted about 80 interviews with people in the private sector, government, and academia from the United States and Mexico who are familiar with bilateral agricultural trade and the processes regulating trade at the border. Interviewees included professionals employed by exporters, importers, customs brokerages, and industry associations, as well as owners of such firms. The interviews focused on three main topics: (1) processes and procedures governing cross-border agricultural shipments, (2) the development and harmonization of homologous operational systems by the U.S. and Mexican Governments, and (3) intergovernmental cooperation. In order to conduct interviews in person and to gain first-hand knowledge of the U.S.-Mexico border, team members made extensive visits to three border regions: (1) Nogales, Arizona, and Nogales, Sonora; (2) Laredo, Texas, and Nuevo Laredo, Tamaulipas; and (3) San Diego (Otay Mesa), California, and Tijuana, Baja California.

# Opportunities for Making U.S.-Mexico Agricultural Trade More Agile

## Introduction

As part of the North American Free Trade Agreement (NAFTA), Mexico and the United States gradually eliminated all tariffs and quotas governing bilateral agricultural trade during a 14-year transition period that lasted from January 1, 1994 to January 1, 2008.<sup>1</sup> Prior to NAFTA, this trade was subject to import tariffs that averaged about 5.7 percent on a trade-weighted basis (Burfisher et al., 1992),<sup>2</sup> and bilateral agricultural trade faced many formidable barriers. For instance, Mexico required import licenses for a subset of commodities (including corn, wheat, barley, and dry beans) accounting for about one-quarter of the value of U.S. agricultural exports to Mexico (Link and Zahniser, 1999), while the United States maintained higher seasonal import tariffs on Mexican fruit and vegetables during the parts of the year when they competed with U.S. produce in the marketplace.

As the United States and Mexico liberalized their bilateral trade, they continued to cooperate on sanitary, phytosanitary, and other regulatory issues affecting the agricultural sector. For example, new phytosanitary protocols enabled the export of Mexican avocados to the United States, while a coordinated campaign by all three NAFTA governments established a harmonized approach to mitigating the risks associated with bovine spongiform encephalopathy (BSE).<sup>3</sup> Together, this sweeping trade liberalization and continuing regulatory cooperation provided the policy setting for a dramatic increase in U.S.-Mexico agricultural trade. Between 1993 and 2015, U.S. agricultural exports to Mexico grew from \$3.6 billion to \$17.7 billion, while Mexican agricultural exports to the United States increased from \$2.7 billion to \$21.0 billion (fig. 1). When adjusted for inflation, this growth in bilateral agricultural trade amounts to increases of 222 percent (U.S. exports) and 408 percent (Mexican exports).<sup>4</sup>

With full implementation of NAFTA's trade liberalizing provisions, Mexico and the United States must look to means other than tariff and quota elimination if they are to foster further growth in bilateral agricultural trade. Improving border infrastructure is one approach to this challenge but often requires a substantial investment of time and money, as two examples of U.S. border facilities illustrate. First, renovation and expansion of the Mariposa Land Port of Entry in Nogales, Arizona began with the

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<sup>1</sup>Canada, the other NAFTA member, also participated in intraregional trade liberalization. While NAFTA eliminated all tariffs and quotas on U.S.-Mexico agricultural trade, it exempted some aspects of U.S.-Canada and Mexico-Canada agricultural trade from such policy changes. Most of these exceptions concern the dairy, poultry, and egg product sectors, in which Canada maintains strict import controls as part of its supply-management policies. NAFTA also allows its member countries to continue applying national laws concerning antidumping and countervailing duty measures, and agreements to suspend specific trade-remedy cases have led to the imposition of new trade restrictions, including minimum prices for U.S. fresh tomato imports from Mexico and minimum prices and quantitative ceilings for U.S. sugar imports from Mexico.

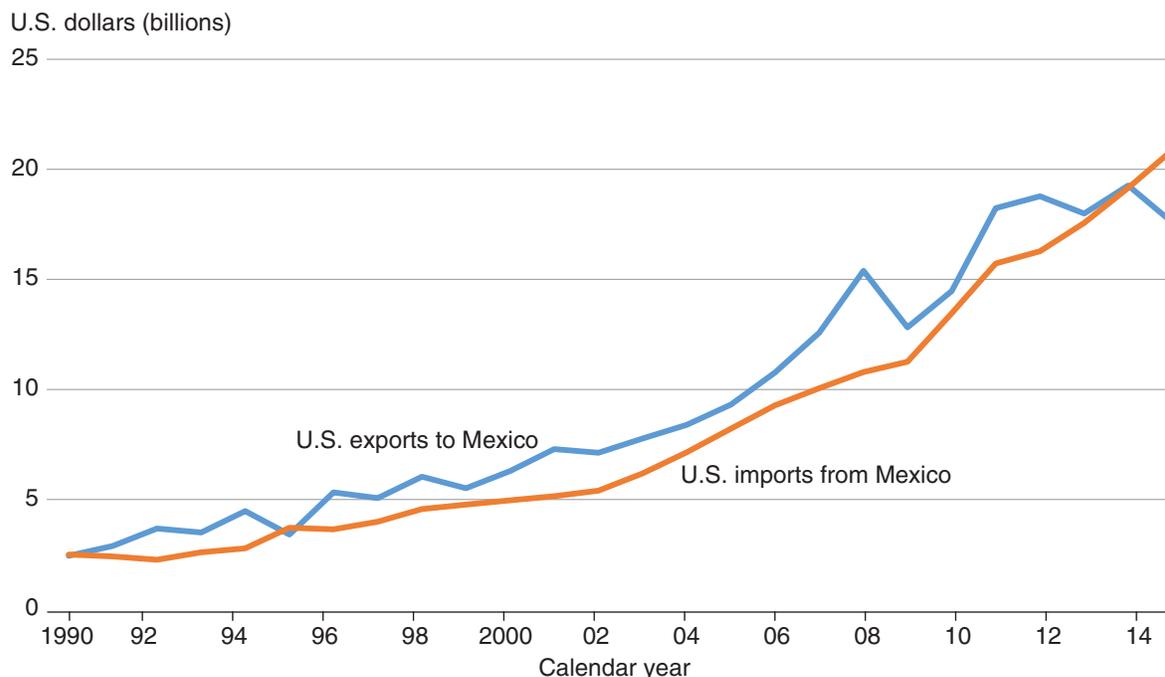
<sup>2</sup>The estimate of 5.7 percent applies to both U.S. agricultural exports to Mexico and Mexican agricultural exports to the United States and was calculated using tariff data for 1991 and trade weights for 1989.

<sup>3</sup>BSE, sometimes referred to as "mad cow disease," is a chronic degenerative disease affecting the central nervous system of cattle. The disease belongs to the group of transmissible spongiform encephalopathies, which also includes scrapie in sheep and goats and chronic wasting disease in elk and deer (USDA/APHIS, 2013).

<sup>4</sup>Implicit price deflators for U.S. gross domestic product (GDP) from U.S. Department of Commerce, Bureau of Economic Analysis (2016) were used to adjust the nominal trade values.

Figure 1

**Trade liberalization and regulatory cooperation have facilitated growth in U.S.-Mexico agricultural trade beyond the NAFTA period**



Source: U.S. Department of Commerce, Census Bureau, *Foreign Trade Statistics*, as cited by USDA/FAS (2016).

issuance of a Presidential permit to reconfigure the facility in 2005; the actual construction of the project lasted more than 5 years (2009-14) and cost \$250 million (Prendergast, 2014a).

Second, the new Otay Mesa East Port of Entry is under construction between Tijuana, Baja California, and San Diego, California. A feasibility study for this project was conducted in 2008, construction on the highway leading to the port from the San Diego side began in 2013, and the project’s current target completion date is 2017 or 2018, with an estimated price tag of \$500 million to \$700 million (San Diego Association of Governments, 2015a, 2015b). In Mexico, the Federal Government has devised a regulatory framework (published in the *Diario Oficial de la Federación* on April 16, 2015) through which the private sector invests in the inspection infrastructure necessary for enhancing trade flows at entry points that typically suffer bottlenecks (SAGARPA, 2015). The Mexican Government is also working with rail companies to improve current facilities in order to accelerate trade flows and facilitate opportunities for intermodal shipments.

Another way to foster further growth in U.S.-Mexico agricultural trade is to modify border procedures in ways that make that trade *more agile*, allowing products to cross the border more quickly and easily. Portugal-Perez and Wilson (2010) distinguish between “hard” infrastructure (ports, airports, roads, rail infrastructure, and information/communications technology) and “soft” infrastructure (export and import procedures, customs management, regulations, and transparency). Improvements to border processes and procedures can lower transaction costs, shorten transit time from origin to destination, and increase compliance with the various rules, regulations, and requirements that govern bilateral agricultural trade. Focusing on border processes and procedures can enhance the functioning of existing and future border infrastructure and cost far less than a large infrastructural project.

Trade facilitation has been one focus of trade negotiations at the multilateral, regional, and bilateral levels.<sup>5</sup> In December 2013, the member countries of the World Trade Organization (WTO) concluded negotiations on a Trade Facilitation Agreement that “contains provisions for expediting the movement, release and clearance of goods, including goods in transit...[;] sets out measures for effective cooperation between customs and other appropriate authorities on trade facilitation and customs compliance issues...[; and] contains provisions for technical assistance and capacity building in this area” (WTO, 2016b). This agreement will take effect once approved by two-thirds of the WTO members.<sup>6</sup> Most regional and bilateral trade agreements (including NAFTA) also contain trade-facilitating provisions, even if those provisions are not explicitly cast within the framework of trade facilitation (WTO, 2015).

While a comprehensive evaluation of activities that facilitate agricultural trade between the United States and Mexico has not been undertaken, Novy (2013) finds that falling trade costs are a key factor behind the long-term growth in U.S.-Mexico trade: the tariff equivalent of the trade costs affecting bilateral trade (agricultural and nonagricultural) dropped from 96 percent in 1970 to 33 percent in 2000, and this reduction accounts for an estimated 57 percent of the growth in bilateral trade over this period. The WTO (2015) emphasizes that protracted export schedules and uncertain delivery times can be significant obstacles to trade in perishable agricultural goods. In a study of U.S. imports and the tradeoffs between air and ocean freight, Hummels and Schaur (2012) estimate that each day in transit amounts to the shipment being subject to an ad valorem tariff of 0.6 to 2.3 percent.<sup>7</sup>

What opportunities exist to make U.S.-Mexico agricultural trade more agile? To answer this question, this study solicited the views of people from the private sector, government, and academia in Mexico and the United States who are knowledgeable about bilateral agricultural trade. Those interviewed include persons who work for exporters, importers, customs brokerages, and industry associations and thus have direct experience with border processes and procedures.

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<sup>5</sup>Economists sometimes use the word “trade facilitation” to encompass the “simplification, modernization, and harmonization of export and import processes” (WTO, 2015). The *2015 World Trade Report* compares several definitions of trade facilitation used by researchers and international organizations.

<sup>6</sup>Saudi Arabia is the 89th and most recent country to ratify the agreement (WTO, 2016a). Both Mexico and the United States have also ratified the agreement. Currently, the WTO has 162 members, so two-thirds corresponds to 108 members.

<sup>7</sup>This estimate is not reflective of U.S.-Mexico trade, however, where trucking and rail are the predominant modes of transportation.

## Research Approach

The research team consisted of specialists in U.S.-Mexico agricultural trade and sanitary, phytosanitary, and food safety measures from three entities in the U.S. and Mexican Governments:

- USDA’s Economic Research Service (ERS);
- SAGARPA’s (Secretariat of Agriculture, Livestock, Rural Development, Fisheries and Food) National Service of Agri-Alimentary Health, Safety, and Quality (SENASICA—Servicio Nacional de Sanidad, Inocuidad, y Calidad Agroalimentaria); and
- SAGARPA’s General Coordination of International Affairs (CGAI—Coordinación General de Asuntos Internacionales).

To solicit ideas for making bilateral agricultural trade more agile, the research team conducted about 80 interviews—the vast majority of which were conducted jointly by at least 1 Mexican member and 1 U.S. member of the research team (see box, “Whom Did We Interview?”).

The interviews focused on three main topics: (1) processes and procedures governing cross-border agricultural shipments, (2) development and harmonization of homogenous (similar) operational systems by the U.S. and Mexican Governments, and (3) intergovernmental cooperation. Soliciting stakeholder opinions regarding *specific border procedures* was crucial to understanding how such measures could be improved. Respondents were asked to identify any cross-border processes that cause bottlenecks due to limited inspection capacity, are redundant, or have little value, meaning, or significance. Given the importance of trucking costs to bilateral agricultural trade, transportation

### Whom Did We Interview?

This report is primarily based on a series of informal, voluntary conversations with experts from the private sector, government, and academia in Mexico and the United States who are knowledgeable about the border processes and procedures affecting U.S.-Mexico agricultural trade. We spoke with exporters, importers, customs brokers, freight forwarders, representatives of trade organizations and industry associations, consultants, current and former government officials, current and former government employees, and university-based researchers.

No economic data such as annual receipts or number of employees were collected that would enable us to classify private firms as small, medium, or large. Firms engaged in bilateral agricultural trade are of various sizes; for instance, the customs brokers interviewed appeared to have fewer employees than the exporters and importers. Mid-level managers were most common in the public-sector interviews, although these interviews also included agricultural inspectors and high-level officials.

The interview participants were identified using the research team’s professional contacts, including people interviewed previously (a method known as “snowball sampling”). This sampling technique is unlikely to have generated a representative sample, but it suffices given the exploratory nature of the research, the complexity of the topic, and the lack of data needed to construct a probability-based sampling frame.

issues were discussed in some interviews, even though USDA and SAGARPA have few regulatory responsibilities in this area.<sup>8</sup>

The *development and harmonization of homologous operational systems* by the U.S. and Mexican Governments would help minimize differences between the two countries' systems for border security, inspection, and regulation and greatly simplify the processes for shipping agricultural products across the border. Two such operational systems are (1) Single Window Environments and (2) risk-based inspection systems.

*Intergovernmental coordination* plays a prominent role in the maintenance and strengthening of the agricultural trading relationship between Mexico and the United States. During the interviews, stakeholders provided assessments of “best practices” for cooperation and coordination between governments and cited needs for infrastructural improvements.

In order to conduct interviews in person and to gain first-hand knowledge of the U.S.-Mexico border, the research team studied three border regions:

- Nogales, Arizona, and Nogales, Sonora (July 21-23, 2014);
- Laredo, Texas, and Nuevo Laredo, Tamaulipas (August 11-13, 2014); and
- San Diego (Otay Mesa), California, and Tijuana, Baja California (August 22, 25-26, 2014).

Additional interviews were conducted in other U.S. and Mexican cities—including Mexico City; Washington, DC; Celaya, Guanajuato; El Paso, Texas; Las Cruces, New Mexico; Querétaro, Querétaro; and Weslaco, Texas—as well as by telephone.

The three regions were selected because of their geographic diversity and their importance to U.S.-Mexico agricultural trade. The two Laredos (Nuevo Laredo, Tamaulipas, and Laredo, Texas) are the leading points of entry and exit for U.S.-Mexico agricultural trade (table 1). The Nogales region is the fifth leading Customs District for U.S. agricultural exports to Mexico and the second leading district for Mexican agricultural exports to the United States. During the winter and spring, Nogales is the leading district for Mexican fruit and vegetable exports to the United States. The Tijuana/San Diego region is the fourth leading district for U.S. agricultural exports to Mexico and the third leading district for Mexican agricultural exports to the United States, much of which consists of fruit and vegetables. Together, the ports in these three Customs Districts were the point of entry for 87 percent of Mexican agricultural exports to the United States and the point of exit for 69 percent of U.S. agricultural exports to Mexico during 2012-14.

Efforts to facilitate U.S.-Mexico agricultural trade are complicated by three prominent factors. First, agricultural trade is a small fish in the sea of U.S.-Mexico trade in goods. In 2015, agricultural products accounted for just 7 percent of both U.S. exports to Mexico and Mexican exports to the United States (fig. 2). As a result, many people familiar with bilateral trade in *nonagricultural* products who might assist with efforts to make trade in *agricultural* products more agile have only a limited understanding of agricultural trade.

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<sup>8</sup>In the United States, regulation of the trucking industry is generally the responsibility of the U.S. Department of Transportation and similar entities at the State level, while in Mexico, it is generally the responsibility of the Secretariat of Communications and Transport (Secretaría de Comunicaciones y Transporte) and similar State-level entities.

Table 1

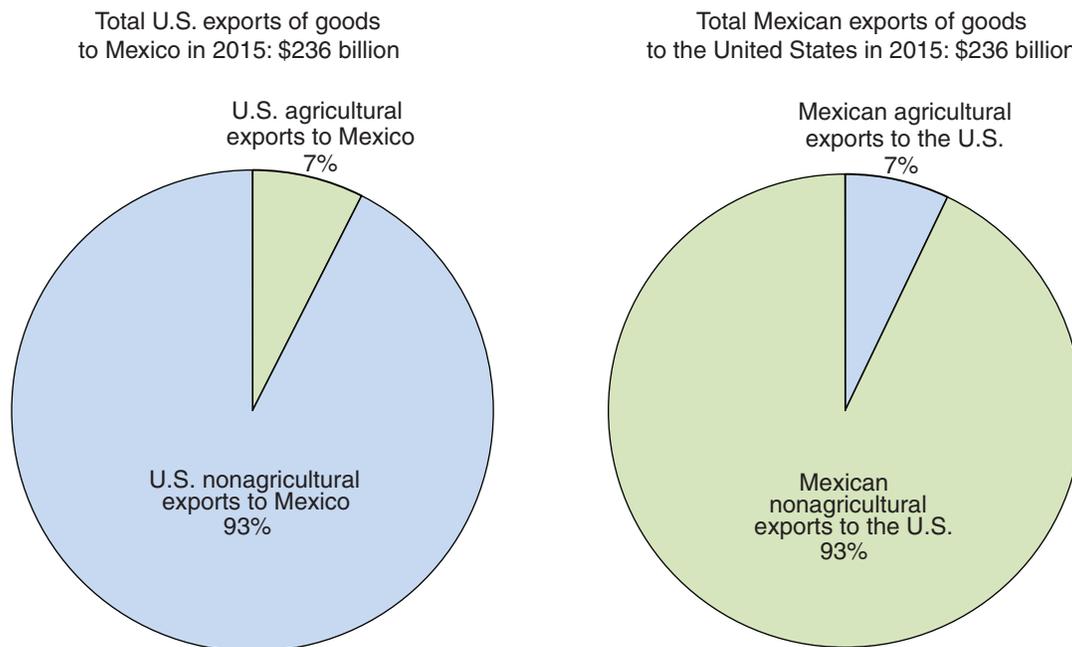
**U.S.-Mexico agricultural trade by U.S. Customs District: Annual averages, 2013-15**

Rank	U.S. Customs District	Exports to Mexico	Share	Rank	U.S. Customs District	Imports from Mexico	Share
		<i>Millions of dollars</i>	<i>Percent</i>			<i>Millions of dollars</i>	<i>Percent</i>
	Total, all Customs Districts	18,393	100		Total, all Customs Districts	19,315	100
1	LAREDO, TEX.	10,831	59	1	LAREDO, TEX.	10,469	54
2	EL PASO, TEX.	2,491	14	2	NOGALES, ARIZ.	3,606	19
3	NEW ORLEANS, LA.	1,857	10	3	SAN DIEGO, CALIF.	2,675	14
4	SAN DIEGO, CALIF.	1,596	9	4	EL PASO, TEX.	1,337	7
5	NOGALES, ARIZ.	1,035	6	5	DETROIT, MICH.	122	1
	Other Districts	582	3		Other Districts	1,107	6

Source: U.S. Department of Commerce, Census Bureau, *Foreign Trade Statistics*, as cited by USDA/Foreign Agricultural Service (2016).

Figure 2

**Agricultural products account for a small share of U.S.-Mexico trade in goods**



Sources: U.S. Department of Commerce, Census Bureau, *Foreign Trade Statistics*, as cited by USDA/Foreign Agricultural Service (2016) (agricultural trade); and U.S. Department of Commerce, Census Bureau (2016) (total trade).

Second, many governmental entities outside of USDA and SAGARPA are involved in the regulation of bilateral agricultural trade. In the United States, key agencies include the U.S. Customs and Border Protection (CBP) of the Department of Homeland Security (DHS) and the U.S. Food and Drug Administration (FDA); in Mexico, they include the Tax Administration Service (SAT—Servicio de Administración Tributaria) of the Secretariat of Treasury and Public Debt (SHCP—Secretaría de Hacienda y Crédito Público), and the Federal Commission for the Protection Against Sanitary Risks (COFEPRIS—Comisión Federal para la Protección Contra Riesgos Sanitarios) of the Secretariat of Health (Secretaría de Salud). Given the span of authorities regulating bilateral agricultural trade, there is a need to think holistically about the obstacles impeding this trade and the opportunities to mitigate them.

Third, if border procedures were modified in ways that made bilateral agricultural trade more agile, this might reduce demand for the services provided by firms that specialize in border logistics. As a result, some service providers may be indifferent to making trade more agile. A number of interview participants did not point to *any* border processes or procedures as being duplicative, ineffective due to limited inspection capability, or of little value. The large and growing volumes of bilateral agricultural trade indicate that many trade participants have largely mastered these processes and procedures.

# Issues Affecting Bilateral Agricultural Trade

## Consistency in Standard Inspection Procedures

Interview participants all along the U.S.-Mexico border identified consistency in the implementation of standard inspection procedures—both across ports (i.e., inspections in one port of entry are performed in the same fashion as in other ports) and across time (inspections in a given port are conducted in the same fashion at any point in time)—as a key concern. Consistency *across ports* discourages the practice of “port shopping,” in which shippers or customs brokers strategically choose a particular port based on the relative ease of passing inspection, even though another port might be more efficient in terms of transit time or transportation costs. Consistency *across time* ensures that a good imported in accordance with the defined requirements is admitted regardless of when the product is inspected. From a regulatory standpoint, however, effective risk abatement may dictate more rigorous inspections at particular times and/or places, such as when an outbreak of a foodborne illness is associated with a commodity from a specific growing area.<sup>9</sup>

Both the Mexican and U.S. Governments—sometimes in conjunction with the private sector—foster consistency in inspection procedures. Activities cited in interviews include training seminars for inspectors on quarantine inspection procedures, seminars focusing on particular products, exercises in which officials from different agencies and governments are challenged to address a simulated crisis, and the direct supervision of inspectors by agency officials. The mention of these activities suggests a possible gap between the actual level of inspection inconsistency and the level perceived by some private-sector traders.

The public and private sectors also work together to foster a better understanding within industry of the regulatory requirements governing bilateral agricultural trade. Since 2008, SENASICA has organized at least one public hearing each year in which private-sector entities, representatives in Mexico of the regulatory agencies of foreign governments,<sup>10</sup> service suppliers, and the general public share concerns and ideas for improvement. Also, the industry associations COMECARNE (Consejo Mexicano de la Carne—Mexican Meat Council) and UNA (Unión Nacional de Avicultores—National Union of Poultry Producers) sponsor workshops for customs brokers about the requirements for U.S. meat exports to Mexico and how to comply with those requirements.<sup>11</sup> Similarly, Mexico’s Secretariat of Economy, SAGARPA, and the FDA’s Latin America Regional Office held four workshops on the FDA Food Safety Modernization Act (FSMA) in 2013, each in a different part of Mexico, and the FDA’s regional office conducted outreach activities on two proposed FSMA rules: the Produce Rule and the Preventive Controls for Food for Humans (U.S.-Mexico High Level Regulatory Coordination Council, 2013).

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<sup>9</sup>Interview participants offered several past examples, involving such commodities as Asian vegetables destined for the United States and cattle hides destined for Mexico, to illustrate the importance of consistency. Because most of these examples described short-term challenges that were eventually resolved, we focus on the general concept rather than the details of specific cases.

<sup>10</sup>Representatives of USDA Animal and Plant Health Inspection Service and USDA Foreign Agricultural Service attended the hearings held on September 29, 2015, for example. Press releases from SAGARPA, Coordinación General de Comunicación Social (2015, 2014) report respectively on the hearings held in October 2015 and November 2014.

<sup>11</sup>Presentations from the workshops held in the summer of 2014 are available on the COMECARNE website at <http://www.comecarne.org/presentaciones/>.

In terms of the private sector’s ability to provide candid feedback to government agencies, responses were varied. One interview participant indicated that issues are communicated to the government as they arise—noting that the era of “don’t bite the hand that feeds you” is long gone. Another expressed some reluctance to provide such feedback so as not to sour the working relationship with specific officials.

## Single Window Environments

A Single Window Environment is a system that “allows parties involved in trade and transport to lodge standardized information, mainly electronic, with a single entry point to fulfill all import, export and transit related regulatory requirements” (World Customs Organization, 2015). Many countries throughout the world, including Mexico and the United States, have launched Single Window initiatives.<sup>12</sup>

The Mexican Digital Window for Foreign Trade (VDMCE—Ventanilla Digital Mexicana de Comercio Exterior), or Ventanilla Única for short, has been operational since July 2012, when its use became mandatory and the system was implemented in all Offices of Agricultural Health Inspection. Indeed, Ventanilla Única provides a single system for all of Mexico’s Federal agencies that oversee international trade. By contrast, USDA’s regulatory agencies currently have separate systems. Mexico’s Single Window system continues to be refined, and a planned second stage would add enhancements like electronic phytosanitary and zoosanitary certificates (E-certs) and risk-based inspection modules. The success of these enhancements will depend on reciprocal implementation of corresponding initiatives in the United States.

The U.S. Single Window Environment, known as the Automated Commercial Environment (ACE), is scheduled to become fully operational by the end of 2016 (fig. 3). Mandatory use of ACE for the filing of all electronic manifests began on May 1, 2015, and the transition period toward mandatory use of ACE for all electronic entry and related entry summary filings began on November 1, 2015, with the transition scheduled to end in the summer of 2016. Mandatory use of ACE for all remaining electronic portions of the CBP cargo process is scheduled to begin on October 1, 2016 (USDHS/CBP, 2016b).

Interview participants expressed strong interest in the implementation and refinement of the two single window systems, as the interoperability of VDMCE and ACE would permit the direct access of electronic certificates issued by the two Governments from either system. In July 2015, SAGARPA and USDA signed a letter of intent to cooperate on the electronic exchange of phytosanitary and zoosanitary certificates in order to (1) harmonize the criteria for certifying agricultural products destined for international trade, (2) eliminate the need for the importer or exporter to present the original document, and (3) safeguard plant/animal health and food safety (SAGARPA/ SENASICA, 2015). Only phytosanitary E-certs will be exchanged until the United States develops the capacity to exchange zoosanitary E-certs as well.

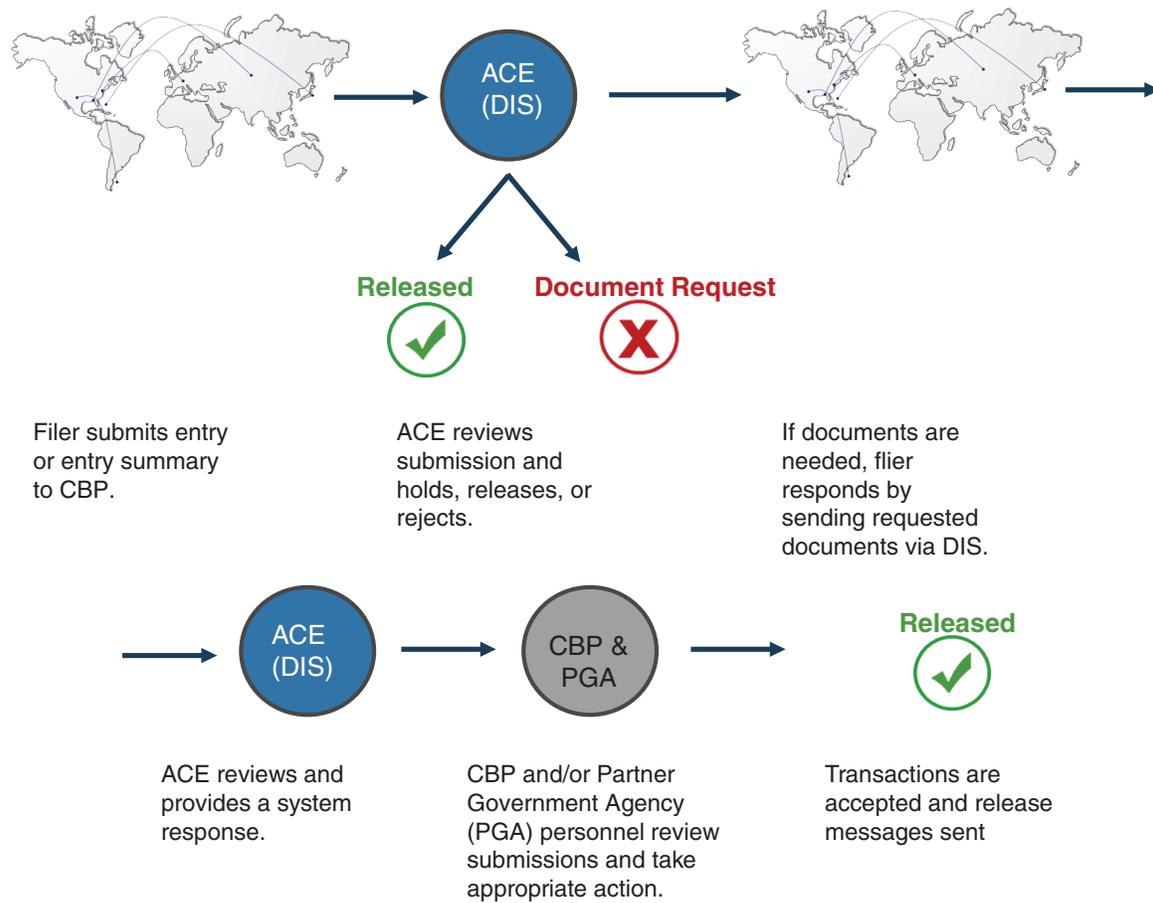
Mexico’s early experiences with Ventanilla Única illustrate the potential opportunities and challenges that ACE will bring. International trade involves a great deal of administrative work, as well as compliance with the numerous requirements of the public and private sectors. In Mexico, a typical transaction in international trade involves about 30 different actors, including government agencies, exporters, importers, providers of transportation services, and customs brokers. These

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<sup>12</sup>See Gobierno de la República (2016) and USDHS/CBP (2016d) for more information about these initiatives.

Figure 3

### How the Automated Commercial Environment (ACE) and Its Document Image System (DIS) Work



CBP = Customs and Border Protection. Source: Adapted from USDHS/CBP (2016a).

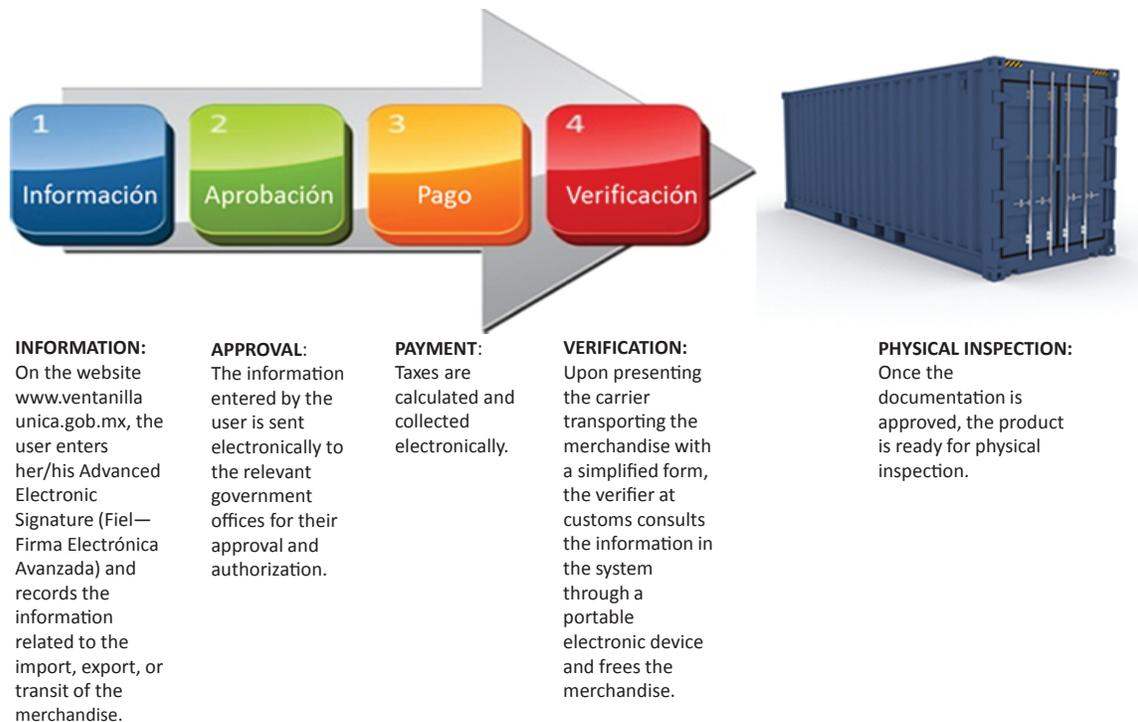
actors are responsible for reviewing the required documents that must accompany each shipment. For commodities regulated by SAGARPA, there are three main documents: the invoice (for fiscal purposes), the sanitary or phytosanitary (SPS) certificate, and sometimes an attachment confirming quarantine treatment. For live animal trade, additional documents are required.

The Mexican Government established Ventanilla Única to enable all the information required for a transaction in international trade to be entered just once at a single point on the Internet (fig. 4), with the ultimate aim of lowering transaction costs and boosting the competitiveness of Mexican exporters. The system is coordinated by the Tax Administration Service (SAT), which works with relevant authorities and government agencies (including nine cabinet-level Secretariats) to obtain information relevant to their procedures.

Ventanilla Única was developed through the gradual release of procedures and documents, systematically simplifying the operations required of its users. Ventanilla Única's users believe that there are still opportunities for improvement. For example, several customs brokers identified the need to develop a system that permits both the printing of electronic certificates and the correction of errors in those certificates, either at or near the border. Occasionally, the system goes offline during regular

Figure 4

### Overview of Ventanilla Única's Operation



Source: Adapted from Gobierno de la República (2016).

business hours, as occurred during one of our interviews. Still, only 3 percent of transactions are managed under contingency plans.

### Administrative Organization and the Electronic Exchange of Information

Single Window Environments can serve as platforms for streamlining regulatory requirements and reducing administrative burdens in agricultural trade. Otherwise, similar information must be submitted several times on different forms. For example, the NAFTA Certificate of Origin (used to demonstrate that a product satisfies NAFTA's rules of origin and is entitled to duty-free status), USDA's Food Safety and Inspection Service's (FSIS) Meat and Poultry Export Certificate of Wholesomeness, and the FSIS Letterhead Certificate for specific meat and poultry products all indicate or confirm the geographic origin of U.S. meat exports to Mexico. With a Single Window system, data for a particular field can be entered just once and the system will populate those data into duplicate fields in all relevant forms within the system. Converting from paper to electronic documents can reduce the amount of paperwork required. For instance, while the new electronic phytosanitary certificates issued by USDA's Animal and Plant Health Inspection Service (APHIS) still need to be printed, the certificates are only one page, versus the four-page forms used prior.

U.S. cheese exports to Mexico exemplify the opportunities for administrative streamlining. Currently, such exports must comply with U.S. grading standards administered by USDA's Agricultural Marketing Service (AMS), and shipments must be accompanied by a number of forms, including:

- NAFTA Certificate of Origin;
- Export Certificate for Animal Products (APHIS Form VS-16-4), which certifies that rinderpest, foot-and-mouth disease, classical swine fever, swine vesicular disease, African swine fever, and contagious bovine pleuropneumonia do not exist in the United States and contains room for additional declarations;<sup>13</sup>
- Certificate of Free Sale, which indicates that the particular product(s) is marketed in the United States or eligible for export, and that the particular manufacturer has no unresolved enforcement actions pending before or taken by FDA. These certificates may be issued by FDA-CFSAN [Center for Food Safety and Applied Nutrition] or by a State governmental authority (USHHS/FDA, 2014a);
- COFEPRIS Prior Sanitary Permit for the Importation of Products (Permiso Sanitario Previo de Importación de Productos);
- COFEPRIS Physiochemical Certificate of Analysis; and
- COFEPRIS Microbiological Certificate of Analysis.

One interview respondent—a cheese exporter from California—offered several suggestions for streamlining these requirements:

- The Export Certificate for Animal Products could be transitioned from paper to an electronic form that would be issued, processed, and verified via an email to the importer, with a confirmation copy sent to the manufacturer. This would reduce typographical errors, delivery delays, and printing and courier costs, and original signed certificates would no longer need to be presented at the Mexican port of entry.
- Ventanilla Única’s requirement that individual front and back images of documents with expiration dates be submitted could be removed, since import permits, NAFTA Certificates of Origin, Certificates of Free Sale, Certificates of Analysis, and pictures of product are already posted on the system.
- The period of validity for selected permits and certificates could be extended so as to reduce the flow of repetitive paperwork. For instance, the period of validity for FDA’s Certificate of Free Sale and COFEPRIS’s Prior Sanitary Permit for the Importation of Products could be extended from 90 days to 1 year.
- COFEPRIS’s Physiochemical Certificate of Analysis and Microbiological Certificate of Analysis could be combined to form a single, simplified certificate. Currently, both certificates are required for each stock keeping unit (SKU) of cheese imported into Mexico—a requirement that leads some importers to buy fewer different SKUs of cheese than they would otherwise.<sup>14</sup>

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<sup>13</sup>For an example of this form, see: <http://www.aphis.usda.gov/regulations/vs/iregs/products/downloads/VS%2016-4%20with%20diag%20line%20pg%20two2.pdf>.

<sup>14</sup>An SKU is “a store’s or catalog’s product and service identification code, often portrayed as a machine-readable bar code that helps the item to be tracked for inventory” (Investopedia, 2015).

Similar issues may apply to live cattle trade. An APHIS veterinarian recounted the paperwork required to move cattle from Mexico to the United States—using a shipment of 18 steers coming from the State of Chihuahua to the Port of Entry at Santa Teresa, New Mexico, as an example. Once the producer is ready to send off his/her animals (typically younger castrated steers/spayed heifers), official paperwork from SAGARPA is required. These documents can be filled out electronically. However, there are spaces where original signatures are necessary. The hard copy paperwork shows where the animals are from, their health, tests that were conducted, and other relevant information from the producer (identification numbers, ear tag information, etc.). Other forms certify that the animals:

1. Have had a tuberculosis test,
2. Are free of ticks,
3. Are properly castrated,
4. Have proper ear tag for exportation,
5. Are certified as not being Holstein Friesian pure breed (or a cross breed), and
6. Will be loaded into a clean and disinfected car/truck for transportation.

Once SAGARPA certifies the documents, the animals are taken to a USDA inspection facility where USDA forms are filled out by APHIS veterinarians. Original signatures for the “Application for Inspection and Dipping” and “Declaration of Importation” are required; in addition, the APHIS veterinarian certifies that there is an “M” brand on the hip of the animal and the date when the animal was dipped in a chemical solution. Altogether, for this 1 group of 18 steers imported from Mexico into the United States, the accompanying paperwork totaled more than 15 pages.

## Incomplete or Inaccurate Paperwork

One recurring challenge cited by interview participants was the preparation of accurate and complete documentation for submission to regulatory authorities. For instance, FAS’s Agricultural Trade Office in Monterrey, Nuevo León, estimates that 95 percent of the requests for assistance that they receive from U.S. agricultural exporters are related to submitting inaccurate documentation. In general, interview participants blamed this challenge on the complexity of regulatory requirements but did not question the legitimacy of agricultural inspections.

Mexican inspectors routinely match lot numbers and similar identifiers (date of slaughter, date of processing, plant number, and authorization to export) of U.S. animal product exports with the corresponding information on filed documentation. Interestingly, the seemingly simple task of listing the correct identifying information in the documentation is often inadequately completed.

These failures in documentation likely result from incorrectly reading and entering long character strings into the required documents. These errors might be mitigated by using character strings in which specific parts of the string serve as a double check on the validity of the entire string and by avoiding the use of characters that resemble each other (for instance, using the number “1” or the letter “I” but not both in a given identification system). Similarly, the use of search engines might locate near-matches between actual identifiers and the identifiers listed in the erroneous documenta-

tion. A few bilateral trade participants still submit documentation that is typewritten (or even handwritten), precluding the use of computer technology to identify errors in data entry.

## A Comprehensive Risk-Based Inspection System

Further adoption of science-based inspection regimes that target sanitary and phytosanitary risks would make agricultural trade more agile. In a risk-based inspection system, the allocation of resources to specific inspection activities, including the type and frequency of inspections, is guided by an assessment of the likelihood and severity of the risks associated with the products subject to inspection.

The National Agriculture Release Program (NARP), created by APHIS and jointly operated by APHIS and CBP, “provides a methodology for evaluating high-volume agricultural imports that are low risk for the introduction of plant pests and plant diseases into the United States” and is used to facilitate the entry of such imports from Mexico and other countries (USDHS/CBP, 2014a). Under the NARP, commercial shipments of NARP-approved commodities may be inspected less frequently under certain conditions. Currently, NARP only applies to commercial shipments of specific fruit and vegetables (fresh, frozen, processed, or semi-processed) from certain countries.

Mexico’s Trusted User (UCON—Usuario Confiable) program allows approved meat importers to have their purchases inspected less often. Participants are required to have the imported meat product inspected in the destination plant by an Official Veterinary Doctor or Authorized Third Specialist, and the destination plant must be a TIF (Tipo Inspección Federal—Federal Inspection Type) establishment. TIF plants are slaughtering/processing plants certified by the Mexican Government as having the highest sanitary standards and most advanced technological processing levels in the country. UCON shipments must be tracked with a tag at all times.

If the UCON program were matched with a companion program for trusted U.S. meat exporters, inspections for specific conduits of U.S. meat exports to Mexico could be defined. Recognized relationships between trusted exporters and importers could allow for the institution of trade-facilitating sanitary protocols that currently apply only to domestic meat shipments. For instance, USDA/FSIS (2015c) currently excludes a U.S. establishment from its *Salmonella* verification-testing program schedule when “that establishment processes all its products into ready-to-eat (RTE) product or diverts all of its raw products ... to another federally inspected establishment for further processing into a RTE product.” The rationale for this exclusion is that the heat of cooking during processing is expected to kill any *Salmonella* in the product. This provision does not apply to shipments of raw products to other countries.

SENASICA is working on a new, risk-based operational system called the Integral System of the Inspection Service (SISI—Sistema Integral del Servicio de Inspección). SISI is an informatics system that uses scientific, statistical, legal, and technical information to determine the rate of inspection for a specific commodity, given different risk variables (SAGARPA/SENASICA, 2013b). SISI will be applied to all products (vegetable, animal, aquacultural, and fishing) regulated by SENASICA, including both domestically produced and imported products, at the firm and product level. SISI will allow for the selection of shipments subject to inspection by identifying low-risk goods and facilitating their entry into Mexico, including some merchandise that is considered to be of low risk that can be inspected at its destination. Implementation of SISI could allow for the reallocation of Mexico’s inspection resources to other activities, such as the inspection of higher risk commodities. SISI is broadly similar to several risk-based inspection systems of the U.S.

Government—including the Predictive Risk-based Evaluation for Dynamic Import Compliance Targeting (PREDICT) operated by the FDA, and the computer system used by FSIS to guide the sampling and re-inspection of imported meat, poultry, and egg products.

PREDICT is FDA’s system “to assist entry reviewers in targeting higher-risk shipments for examination” and to expedite “the clearance of lower-risk cargo, but only if accurate and complete data are provided by importers and entry filers” (USHHS/FDA, 2014b). PREDICT prepares a customized risk score for each import product (referred to as an “entry line”), using automated data mining and pattern discovery, “based on numerical weights assigned to inherent risk rules, data anomaly rules, data quality rules, and the compliance history of firms (ex. manufacturer, shipper, and consignee) and product associated with the line” (USHHS/FDA/DIOP, 2012). These risk scores make it possible for more entry lines to proceed automatically and provide FDA’s entry reviewers with more information for deciding whether to enlist an FDA inspector for further examination (USHHS/FDA, 2014c; USHHS/FDA/DIOP, 2012).

The accuracy of PREDICT’s risk scoring depends on the quality of information provided by importers and entry filers, a point that was emphasized during several field interviews. FDA indicates that shippers often submit incomplete or inaccurate data, which delays the entry of imported goods and diverts FDA resources. Improving the data quality of imports would lead to faster, more consistent, and better informed admissibility decisions. Likely benefits include:

- Faster and more consistent reviews, including fewer stops of low-risk items with data quality issues;
- A larger proportion of shipments that receive a “May Proceed Notice” from FDA, resulting in faster entries and deliveries;
- The reallocation of FDA resources that are currently devoted to fixing issues concerning the quality of industry data;
- More appropriate and consistent safety reviews, which would ultimately lead to safer commerce.

FDA personnel indicated in interviews their willingness to help people in the private sector understand how PREDICT works and learn how to provide information that leads to more accurate scoring—for instance, precisely identifying separate entry lines for closely related products with different risk profiles. FDA personnel also emphasized that the submission of complete and accurate information during the entry process is important to investigating outbreaks of foodborne illness, should such outbreaks subsequently occur.

FDA screens 100 percent of import entry lines through PREDICT and selects imports for manual review and physical inspection in a risk-based manner. Selection of imports for manual review and physical inspection can happen for a variety of reasons, including the PREDICT risk score, the need for sufficient background random sampling, and for-cause assignments. A certain number of inspections are guided by the FDA’s workplan and the necessity for sufficient background random sampling. Random sampling is necessary to evaluate the effectiveness of the PREDICT system and is a necessity for responsible surveillance. By comparison, SENASICA inspects samples drawn from each shipment of the merchandise that it regulates. No inspections are made to cover a quota, since the selection of samples within shipments is made on the basis of a risk analysis.

## Pre-clearance, pre-inspection, and joint inspection facilities

Pre-clearance, pre-inspection, and joint inspection facilities are important elements in the design of some agricultural inspections along the U.S.-Mexico border. The terms “pre-clearance” and “pre-inspection” are sometimes used interchangeably (with or without a hyphen), but the terms have distinct meanings to certain government agencies, and the term “pre-clearance” can have different meanings across government agencies. For Customs and Border Protection (CBP), pre-inspection refers to an official U.S. inspection of a shipment in a foreign country prior to the shipment’s arrival at the U.S. port of entry, while pre-clearance refers to a traveler who is granted permission to enter the United States after the person and his or her baggage undergo immigration, customs, and agriculture inspection on foreign soil and are not subject to further processing or security screening upon arrival (USDHS/CBP, 2014).<sup>15</sup> Thus, for CBP, pre-inspection of a shipment does not mean that the shipment has been cleared to enter the United States; that clearance is obtained later in the border-crossing process. For APHIS, pre-clearance refers to inspections of agricultural commodities that are conducted “in foreign countries under the direct supervision of qualified APHIS personnel in accordance with phytosanitary measures specified by the Agency” (USDA/APHIS, 2015b). In this report, we describe each agency’s activities using its own terminology.

Pre-clearance and pre-inspection allow certain agricultural products to undergo inspections (and pest-prevention treatments, if necessary) in their country of origin and then be imported under a fast-track process. This approach can benefit agricultural trade in several ways. First, pre-inspection facilitates the sale, donation, or disposal of rejected product, since such product has not yet crossed the international border. Second, it expedites the actual crossing of the international border, which could broaden the market for agricultural products in general and perishable commodities in particular. Third, it locates some treatment and inspection activities away from the port of entry, thereby alleviating border congestion (Wilson, 2015).

Pre-inspection is used regularly for U.S. produce exports to Mexico. During the field visits to Nogales, Arizona, and Otay Mesa, California, we visited several private-sector facilities operating under concessions from the Mexican Government where SENASICA personnel pre-inspect U.S. fruit and vegetables bound for Mexico.<sup>16</sup> Similar arrangements for Mexican produce are currently limited to a pre-inspection program authorized by USDA/APHIS (2014) for irradiated mangoes from Mexico. APHIS also operates pre-clearance programs for certain commodities imported from countries other than Mexico, such as grapes from Chile.

The Arizona Department of Agriculture (ADA) inspects fruit and vegetables imported into Arizona on behalf of USDA’s Agricultural Marketing Service in support of U.S. marketing orders. In the past, many of these inspections took place at pre-inspection facilities operated by private-sector concessions in Nogales, Sonora. In 2010, however, these activities were moved to the U.S. side of the border due to security concerns in Mexico (Marizco, 2010; Wilkinson, 2010), a move generally lamented by the Nogales produce industry over the loss in efficiency.<sup>17</sup>

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<sup>15</sup>CBP pre-clears international airline passengers at certain airports in Canada, the Bahamas, Bermuda, Aruba, Ireland, and the United Arab Emirates (USDHS/CBP, 2015b).

<sup>16</sup>See Woodhouse (2015) for a more detailed description of Mexican pre-clearance activities in Nogales, Arizona.

<sup>17</sup>Calvin and Barrios (1998: 32-33) provide a more detailed description of how the inspections on behalf of APHIS once worked.

The United States and Mexico have established a joint pre-inspection facility in Mesa de Otay, Tijuana, Baja California, for certain fresh produce imports from Mexico. This facility, built in a former electronics factory and adjacent to the Otay Mesa Port of Entry, is specifically designed for the expeditious entry of low-risk, high-volume commodities under the NARP (Dibble, 2013). A 180-day pilot operation of this facility was launched in January 2016, and the program will be evaluated and a decision made as to its continuation.

Creation of a joint inspection facility can provide the impetus to build new or renovate existing border infrastructure. The new joint facility in Mesa de Otay, for instance, features a new laboratory, a “state-of-the art refrigerated room where produce can be stored if it is unloaded during the inspection process,” and a “confined lane” leading to the U.S. port of entry (Dibble, 2016). Also, joint inspection facilities are typically secured by one or more national governments and provide easy access for authorized personnel. At the new facility in Mesa de Otay, “armed and uniformed CBP officers must drive through a dedicated lane that takes them directly into the Mexican customs compound; they are not authorized to carry their weapons in Mexico outside its perimeter” (Dibble 2016).

Pre-clearance does not occur for bilateral meat trade. Instead, the U.S. and Mexican Governments recognize each other’s inspection processes and procedures as equivalent in outcome and effect. As part of this approach, processors must be certified by their respective national government as being eligible to export and may be subject to audits by the importing country’s government. Such audits sometimes result in the temporary or permanent decertification of individual meat processing plants.

Meat imports are subject to further inspection by the importing country’s government. All meat, poultry, and processed egg products imported into the United States must be presented for inspection by FSIS at an official import establishment once the necessary forms are filed with CBP and the animal disease requirements of APHIS are met (USDA/FSIS, 2015b). Official import establishments tend to be located away from the port of entry in order to relieve border congestion. In Mexico, inspections of imported meat take place either at a port of entry with available cold storage facilities or, for product consigned to TIF (Federal Inspection Type) plants, at the TIF plant itself. This latter option alleviates border congestion by drawing some inspection activities inland.

Mexico’s Federal Law on Animal Health (*Ley Federal de Sanidad Animal*) allows inspections of live animals to take place outside of Mexico (for quarantine issues). For any other animal or animal byproduct (including meat products), inspections must occur within Mexican territory—either at the point of entry into Mexico or within the border zone, or, if further processing is intended, at a TIF plant.<sup>18</sup> Mexico’s Federal Law on Plant Health (*Ley Federal de Sanidad Vegetal*) allows inspections of imported plant products to be carried out either within or outside of Mexico.

SENASICA is evaluating the economic benefits of a program that relocates some inspections from customs facilities at the border to facilities deeper within Mexico. This program currently covers 21 low-risk commodities from the United States and Canada, such as milk powder, skim milk powder and other dairy products, pet food, peat moss, cream substitutes, and soybean flour. According to preliminary estimates obtained directly from SENASICA, the average transit time is reduced by 28 percent and the total freight cost is reduced by 76 percent in the case of rail. In the case of shipments transported to the border by land and then from the border to an interior customs station by rail, the average total transit time increases by 2 days, but the total shipping cost is reduced by 43.5 percent.

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<sup>18</sup>Mexico’s northern border zone extends 20 kilometers (about 12 miles) south of the border with the United States (*Ley Federal de Salud Animal*, 2012).

This program is scheduled to become part of SISI, and the expectation is to include other items regulated by SAGARPA as part of SISI's first stage.

The United States does not conduct inspections of meat imports in Mexico, and Mexico does not conduct inspections of meat imports in the United States, thereby precluding the establishment of pre-inspection operations for bilateral meat trade. Through the UCON program, however, the Mexican Government allows participating importers of meat intended for further processing to have inspections conducted at a TIF plant, again with the aim of reducing congestion at the border.

Construction of new private-sector facilities in the border zone specifically designed to serve as inspection sites for Mexican meat imports may further discourage the consideration of pre-clearance activities, as some of these new facilities are large and elaborate. We conducted an interview with the owners of one such facility under construction in Nuevo Laredo, Tamaulipas. The new facility is large enough to unload 30 trailers at once—20 refrigerated and 10 dry—and will have a dedicated camera monitoring each shipment so that any participating entity (i.e., customs brokers, exporters, importers, and government inspectors) can observe the inspection process over the Internet. The construction cost of the facility is about \$4 million.

## Insect Identification and Laboratory Testing

Many interview participants cited the importance of conducting pest inspections and laboratory testing of samples at a consistently high level. All U.S. import inspection activities—including some previously conducted under interagency cooperation agreements—were transferred to the U.S. Department of Homeland Security in 2002; responsibility for inspecting agricultural imports shifted from APHIS to CBP in 2003. At U.S. ports of entry, CBP agricultural specialists have three main responsibilities:

- Checking containers and trucks for smuggled agricultural products or packaging materials that might contain invasive species. All conveyances—such as personally owned vehicles, railroads, and commercial trucks—are inspected for compliance with Customs and APHIS regulations, including those of APHIS's Plant Protection and Quarantine (PPQ) program and Veterinary Services (VS).<sup>19</sup>
- Examining wooden pallets that could hide the larvae of wood-boring insects poised to attack native trees or nursery stock and ensuring that shipments comply with International Standard for Sanitary Measures (ISPM) No. 15, which governs wood packaging material in international trade.
- Ensuring that imported fruits and vegetables are pest-free and in compliance with APHIS regulations governing the importation of fruit and vegetables (USDHS/CBP, 2015c).

Any insects intercepted by U.S. inspectors are divided into two broad categories. **Reportable** pests must be reported to APHIS, while **non-reportable** pests are not of quarantine significance. Reportable pests are divided further into actionable pests, which require a regulatory response by inspectors and can lead to the shipment's detention, and non-actionable pests. Shipments detained due to the presence of actionable pests require one of three actions: (1) treatment (for instance, fumigation with methyl

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<sup>19</sup>In 2014, border crossings from Mexico to the United States included about 5.4 million trucks, 3.8 million loaded truck containers, 1.5 million empty truck containers, 10,000 trains, 474,000 loaded rail containers, 436,000 empty rail containers, 214,000 buses, and 69.6 million personal vehicles (CBP Office of Field Operations, as cited by USDOT/RITA/BTS, 2016).

bromide), so that the shipment may enter U.S. commerce; (2) re-export, wherein the shipment is returned to its country of origin and might be exported to a third country; or (3) destruction.

CBP agricultural inspectors receive periodic training in insect identification. Still, inspection delays occur when an intercepted insect is not immediately identified. In such circumstances, the insect is presented to an APHIS/PPQ entomologist at the port of entry. If that entomologist is unable to identify the insect, s/he will send a digital image (or even the insect itself) to entomologists at the Smithsonian Institution in Washington, DC. This requires exacting work, as some insects are difficult to scan digitally. Roughly 10 percent of the interceptions forwarded to APHIS entomologists in the Mariposa Port of Entry require assistance from Washington. These interceptions are submitted as “urgent,” and a response is made within 24 hours.

Testing of food import samples is conducted by FDA, as guided by PREDICT. FDA’s food inspections are often conducted simultaneously with CBP’s agricultural inspections. Sampling of shipments takes place at the port of entry, but testing takes place at one of the FDA’s official labs, located well away from the U.S.-Mexico border, in States such as Colorado and Arkansas. Even with overnight shipping, the sampling and testing process takes 4-7 days. To reduce this turnaround time, the FDA sometimes deploys mobile laboratories to key ports of entry such as Nogales during the peak import season. Several interview participants in the Nogales area commented positively on this arrangement. Similarly, the Mexican Government operates three mobile laboratories in which pathogenic microorganisms and toxic residues are analyzed. This capability permits greater flexibility and responsiveness in the deployment of laboratory resources.

## Mexican Laboratories

SENASICA has a network of laboratories that attend to the detection of agricultural pests and diseases. These labs have the infrastructure to provide diagnostic and verification services that are timely, reliable, and of high quality. Services are carried out by highly specialized staff employing modern techniques and advanced, world-class equipment. These resources enable agile decisions on the control and eradication of pests and diseases of high risk to the agricultural, livestock, aquacultural, and fishing sectors.<sup>20</sup>

Mexico also has a network of 14 Approved Laboratories for Phytosanitary Diagnosis (Laboratorios de Diagnóstico Fitosanitario Aprobados), operated by the private sector and located mainly in the central part of the country and along the U.S.-Mexico border. These accredited laboratories are authorized by SENASICA to conduct phytosanitary diagnoses of vegetables and vegetable products—providing their services mainly to importers and producers. In addition, Mexico has four accredited and approved laboratories of this type for the diagnosis of diseases in aquatic organisms.

In general, the officers who inspect the imports are also the ones who take samples of such goods, following procedures established in SENASICA’s *General Guide for the Certification of Merchandise Regulated by SAGARPA, Imported for Commercial Purposes* (*Guía General para la Certificación de Mercancías Reguladas por la SAGARPA, Importadas con Fines Comerciales*),

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<sup>20</sup>Details about SENASICA’s three national reference laboratories in the field of animal health are available online (SAGARPA/SENASICA, 2014), as is information about the seven laboratories for phytosanitary diagnosis that form SENASICA’s National Center for Phytosanitary Reference (CNRF—Centro Nacional de Referencia Fitosanitaria) (SAGARPA/SENASICA, 2013a). These Government-owned facilities are separate from the Government-approved laboratories operated by the private sector.

other published requirements, and bilateral work plans. For phytosanitary tests conducted by approved laboratories, the importer selects the laboratory to which the sample will be sent. Most test results are reported in 2-3 days. Only in very specific cases, such as potatoes for consumption in the border region, is the result ready within 24 hours.

## Hours of Operation

Some interview participants expressed their desire for longer hours of operation by FDA inspectors at the U.S. ports of entry and for a closer alignment of working hours by the various U.S. agencies responsible for agricultural inspections. The FDA's standard hours of operation are 8:00 a.m. to 4:30 p.m., Monday through Friday (USHHS/FDA, 2015); the FDA also conducts food inspections on Saturdays at some ports of entry, such as Nogales and Otay Mesa. It was not clear from the interviews what obstacles prevent northbound trucks from arriving at ports of entry during normal business hours. Instead, industry participants apparently seek the greater flexibility afforded by longer hours of operation. Several respondents recommended the availability of agricultural inspections 24 hours a day, 7 days a week, every day of the year, with shippers paying a premium for inspections conducted outside normal business hours. However, one interview participant cited a pilot program in the El Paso area that featured extended hours and was hardly utilized.

Mexico's agricultural, aquacultural, and fishing health officers provide inspection services during hours established by the general criteria in SENASICA's *General Guide*, as follows:

- At installations located in Mexico, Monday and Friday from 9:00 AM to 8:00 PM, and Tuesday, Wednesday, and Thursday from 9:00 AM to 7:00 PM.
- At installations located in the United States, Monday to Friday, 9:00 AM to 4:00 PM. Shorter hours at Mexican installations in the United States are to allow for officials' travel time from Mexico and back.

Hours of operation for rail inspections are specified in the agreement authorizing the rail crossing, and off-hours service can be requested in advance (SAGARPA/SENASICA, 2014a). At the Piedras Negras-Eagle Pass and Nuevo Laredo-Laredo rail crossings, SAGARPA operates 24 hours a day, every day of the year.

Just as Mexico has used public-private partnerships to construct new infrastructure for inspections, the United States has used such partnerships to expand the resources available for inspection activities. Recent legislation authorizes the CBP to accept reimbursements from local governments and businesses for "customs, immigration, and agricultural processing; salaries for additional staff; and overtime expenses at airports" (USDHS/CBP, 2014b). This approach has enabled the CBP to provide more overtime to its inspectors at international bridges in El Paso, thanks to a reimbursable service agreement with the city government (Martinez, 2014). The legislation also authorizes the CBP and the General Services Administration (GSA) to "accept donations of real or personal property or non-personal services to be used for construction, alterations, operation, or maintenance of a new or existing port of entry" (USDHS/CBP, 2014b).

## Sanitary and Phytosanitary Protocols

Interview participants recommended modifying specific sanitary and phytosanitary protocols to facilitate trade of certain products. One suggestion was to reduce the amount of biometric sampling

and cutting to which fresh produce imports are subjected. For instance, with Hass avocados imported by the United States from Mexico, sampling and cutting must take place in the field, at the packinghouse, and at the port of first entry into the United States. In February 2015, USDA/APHIS (2015a) published a proposed rule that would allow the cutting at the port of entry to occur at the discretion of the inspector, with the aim of increasing the operational flexibility of CBP agricultural inspectors. During our field visits, we observed sampling and cutting of various fresh fruit and vegetables carried out not only by personnel from the U.S. and Mexican Governments, but also by representatives of buyers.

Some of the suggested sanitary and phytosanitary changes are intended to allow for broader participation in bilateral trade, in terms of either the types of commodities traded and/or the number of participating firms. For instance, a shorter monitoring period was recommended for the voluntary U.S. export certification program for live sheep and goats. Mexican regulations require that imported sheep and goats show no clinical signs of scrapie (USDA/APHIS/VS, 2007).<sup>21</sup> As part of its efforts to eradicate scrapie in the United States, APHIS operates a voluntary export certification program that requires a flock to be scrapie-free for a minimum of 7 years in order to be certified (USDA/APHIS/VS, 2009). This requirement may discourage new entrants into the export market, even though a variety of producers—including small ranchers and backyard producers—are capable of raising sheep and goats on a commercial basis. U.S. sales of live sheep and goats to Mexico amounted to just 17,000 head of sheep (\$1 million) and 833 goats in 2015 (USDA/FAS, 2016).

Interview participants also expressed interest in phytosanitary protocols that would lead to more U.S. growers participating in exporting stone fruit to Mexico. Phytosanitary work plans crafted by U.S. and Mexican authorities since 1999 have been amended over the years to allow integrated pest management systems as an alternative to fumigation with methyl bromide and to extend coverage to additional producing States and types of fruit. In this context, U.S. exports to Mexico of apricots, cherries, peaches, nectarines, and plums increased from about 21,000 to 27,000 metric tons between 2004 and 2015, and the value of this trade grew from \$16 million to \$43 million. Interview participants cited the need for more cost-effective approaches to Mexican oversight and a redoubling of cooperative efforts focused on common external pest threats. Several interview participants opined that importing countries should defer more to inspection authorities in the exporting country to ensure that produce exports meet phytosanitary and food safety requirements.

## Drayage Trucks: A Response to Border Congestion and Different Trucking Standards

Researchers have pointed to the extensive use of the drayage system to transport goods by truck across the U.S.-Mexico border as a major source of border congestion, longer crossing times, and higher shipping costs (Coyle, 2000; Fox et al., 2003; Prozzi, et al., 2008). In contrast, several interview participants suggested that the drayage system is, to some degree, a *response* to border congestion and differences in U.S. and Mexican trucking standards—particularly differences in the weight standards for tractor-trailers.

In the drayage system, transporting cargo by truck between Mexico and the United States usually requires at least three vehicles: “a long-haul service that transports the cargo from Mexico/United

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<sup>21</sup>Scrapie is “a fatal degenerative disease affecting the central nervous system of sheep and goats” (USDA/APHIS/VS, 2009).

States to a place near the border, a short-haul drayage truck that moves the goods across the border, and a third truck that delivers the cargo to its final destination beyond the U.S.-Mexico border commercial zone” (Prozzi et al., 2008: 1-2). The drayage system is attractive in its affordability; the cost of the services provided by a drayage truck and driver is less than the cost of similar services if provided by a long-haul truck and driver.<sup>22</sup>

Other incentives also motivate the loading and unloading of goods in the border region. First, shippers may use the opportunity to adjust the weight loads of trucks to approach the maximum allowed in particular jurisdictions. In the United States, the maximum gross weight for commercial vehicles traveling the U.S. Interstate Highway System is 80,000 pounds (about 36.3 metric tons) (USDOT/FHA, 2013). In Mexico, the maximum gross weight for the most common type of tractor-trailer (T3-S2, a type of 18-wheeler) is 46.5 metric tons (about 103,000 pounds), but some configurations of trucks have maximum gross weights as high as 66.5 metric tons (about 147,000 pounds) (Secretaría de Comunicaciones y Transportes, 2014; Transportation Research Board of the National Academies, 2011).<sup>23</sup> Second, the border region provides an opportunity to aggregate shipments from various suppliers with the intention of shipping them to a specific destination. Third, with a fair amount of horizontal integration in the trade logistics sector, many Mexican customs brokers have their own forwarding agent in the United States and their own drayage business.

One alternative to the drayage system is to have either the U.S. or Mexican long-haul truck also perform the border crossing service, as was reported during interviews in the San Diego/Tijuana and Reynosa/McAllen regions. Another alternative is cross-border, long-haul trucking, as allowed by NAFTA. In this approach, a single, long-haul truck, operated either by a U.S. or a Mexican carrier, provides “door-to-door” service from the origin in one country to the destination in the other.<sup>24</sup> A third alternative is to dedicate a trailer rather than a tractor for providing door-to-door service. In this variant of the drayage system, the same trailer is hauled by a sequence of different tractors from origin to destination. This approach is sometimes used by agricultural exporters who are shipping a full trailer of product to a single customer.

Even with alternatives, the drayage system continues to be the predominant method used to move goods by truck across the U.S.-Mexico border. Participation was very low in the U.S.-Mexico Cross-Border Long-Haul Trucking Pilot Program, operated by the U.S. Department of Transportation’s Federal Motor Carrier Safety Administration (USDOT/FMCSA) from October 14, 2011, to October 10, 2014. Only 12 Mexican carriers had operational authority at the end of the program, although one carrier made 20,102 crossings during this period and another made 5,528 crossings (USDOT/FMCSA, 2014).<sup>25</sup>

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<sup>22</sup>Trucks and trucking companies that provide border-crossing services are sometimes referred to as “cruzadores” in Spanish. Interviews in the Nogales area revealed that Mexican drayage companies sometimes hire drivers on the spot on a short-term basis, especially during the peak export season.

<sup>23</sup>Differences between U.S. and Mexican trucking regulations have long been recognized as a possible opportunity for regulatory alignment. For instance, the late Robert Pastor, who wrote extensively on North American efforts toward integration, advocated that Canada and the United States “each ... develop national standards on weight, safety, and configuration of trucking and then negotiate with Mexico on a single set of standards” (Pastor, 2011).

<sup>24</sup>NAFTA’s provisions for cross-border trucking between the United States and Mexico do not apply to routes exclusively within either country.

<sup>25</sup>In January 2015, USDOT/FMCSA (2015) announced that it was accepting applications from Mexican carriers to conduct cross-border, long-haul trucking operations.

## New Transportation Facilities and Shipping Routes

Some interview participants indicated that rail service, particularly truck-rail systems, may be underutilized in U.S.-Mexico agricultural trade. While intermodal transport is used in other industries, the agricultural and food sectors do not yet fully subscribe due to regulatory constraints and the scale and location of border infrastructure. In addition, the volume of exports entering the United States through the Laredo Customs District is growing faster than exports entering through the Nogales or San Diego Customs Districts, signifying a shift toward Texas ports in both absolute and proportionate terms. These developments may require new logistics and inspection protocols to accompany any new transportation facilities and accommodate changes in trade volumes across ports of entry.

Agroparque AARC, an agro-industrial park proposed by the Asociación de Agricultores del Río Culiacán (AARC), would feature intermodal truck-rail connections. It would include an area for loading and unloading containers of fruit, vegetables, and miscellaneous products; an area for loading and unloading grain shipments; and a bonded warehouse where sanitary and phytosanitary inspections could take place. The proposed facility would cover about 50 hectares and be located near Culiacán, Sinaloa, the capital city of Mexico's leading fruit/vegetable-producing State. A rail line, to be used by trains with intermodal railcars, would extend northward from the facility to either Nogales or Tucson, thereby providing an alternative to transporting produce exports to Nogales by truck (Asociación de Agricultores de Río Culiacán, 2014). An executive plan for this proposed facility has been completed, and a preliminary assessment of the plan indicates that the project is feasible. The next step is to secure investors for the project.

Speed, rather than cost, appears to be the main challenge to rail's becoming a viable alternative for transporting produce across the interior of the United States. In 2014, shippers experimented with using rail to ship watermelons from Nogales to Jessup, Maryland. The journey lasted 22 days (Prendergast, 2014b). By contrast, the driving time between these two cities is about 35 hours.

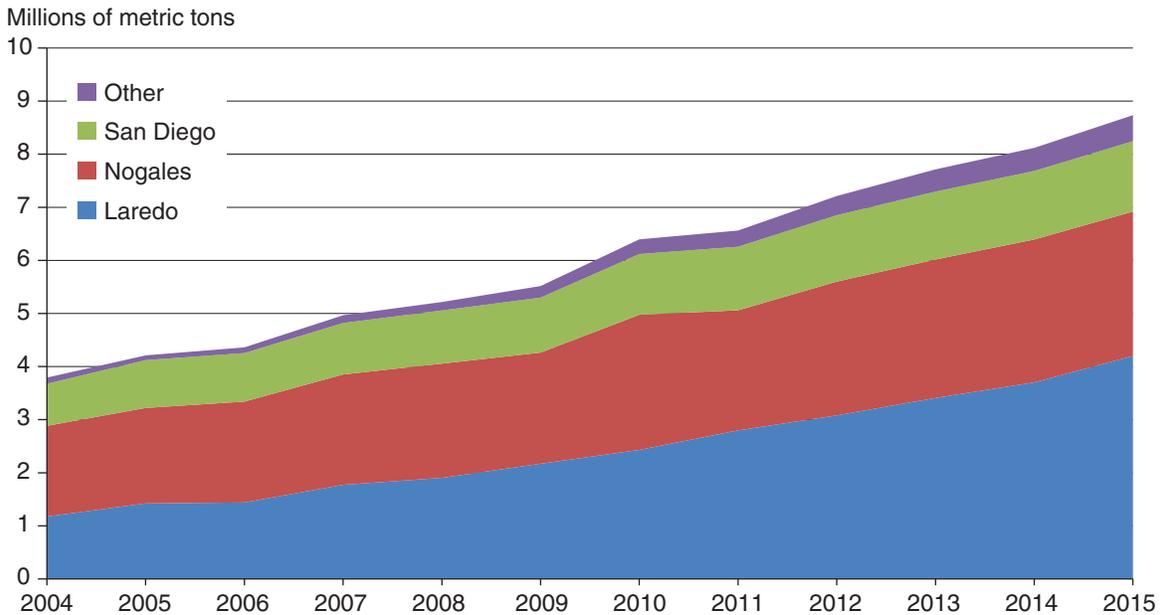
U.S. trade data indicate increased use of eastern ports such as Laredo and Weslaco, Texas, to import fresh or frozen fruit and vegetables from Mexico (fig. 5). In each of the three main Customs Districts for these imports—Laredo, Nogales, and San Diego—imports increased over the past decade. But imports in the Laredo district (which encompasses both Laredo and Weslaco, among other ports of entry) rose at a faster rate. As a result, Laredo's share of these imports increased from 31 percent to 48 percent between 2004 and 2015, while Nogales' share decreased from 45 percent to 31 percent and San Diego's share declined from 21 percent to 15 percent.

Several causal factors explain this geographic shift. First, in 2013, the Mexican Government inaugurated the new Federal Highway 40D between Mazatlán and Durango. This new toll road includes a number of infrastructural projects—including 63 tunnels and 32 bridges—designed to expedite transit through the rugged terrain of the Sierra Madre Mountains. As a result, end-to-end travel on this toll road takes about 2-1/2 hours, compared with 6-8 hours on the old Federal Highway 40 (“Durango-Mazatlán Hwy 40D,” 2014).

Second, fruit and vegetable production in central and eastern Mexico has expanded faster than in western Mexico. Between 2001-03 and 2012-14, Mexico's total annual average production of fruit, vegetables, and dry legumes increased by 22.3 percent (table 2). Of the 10 Mexican States with the largest percentage increases in production over this period (Quintana Roo, Querétaro, Jalisco, Morelos, Tamaulipas, Sonora, Aguascalientes, Michoacán, Tlaxcala, and Coahuila), all but Sonora are closer to Laredo, Texas, than to Nogales, Arizona. These 10 States less Sonora accounted for

Figure 5

**U.S. fruit and vegetable imports from Mexico, fresh or frozen, by U.S. Customs District: 2004-15**



Source: U.S. Department of Commerce, Census Bureau, *Foreign Trade Statistics*, as cited by USDA/Foreign Agricultural Service (2016).

28 percent of Mexican fruit, vegetable, and dry legume production in 2012-14, compared with 24 percent in 2001-03.

## Regulation and Inspection of Mexican Trucks Entering at Nogales

Several interview participants in the Nogales area expressed concern that some Mexican trucks would be stopped and inspected multiple times by U.S. Federal and State trucking authorities. Mexican authorities propose the establishment of a pilot program between the United States and Mexico that includes the following elements:

- Pre-inspection of trucks in Mexico and U.S. recognition of the physical and mechanical inspections of tractor trailers made prior to the border crossing.
- Extensive use of technology in order to share information with the U.S. Department of Transportation/Federal Motor Carrier Safety Administration (FMCSA) in a simultaneous manner.
- A focus on the major mechanical failures that cause FMCSA violations (brakes, suspension, tires, lights, etc.)
- Establishment of a memorandum of mutual recognition between Mexico and the United States to standardize inspections of Mexican commercial vehicles.

Table 2

**Mexican fruit, vegetable, and dry legume production, by State: 2001-03 versus 2012-14**

State	Production, annual average			Share		
	2001-03	2012-14	Change	2001-03	2012-14	Change
	<i>Thousands of metric tons</i>		<i>Percent</i>	<i>Percent</i>		<i>Percentage points</i>
Mexico (national total)	26,821.75	32,789.79	22.3	100.0	100.0	0.0
Aguascalientes	197.54	275.47	39.4	0.7	0.8	0.1
Baja California	669.71	680.25	1.6	2.5	2.1	-0.4
Baja California Sur	213.72	268.22	25.5	0.8	0.8	0.0
Campeche	176.72	184.47	4.4	0.7	0.6	-0.1
Coahuila	226.40	311.54	37.6	0.8	1.0	0.1
Colima	961.34	731.65	-23.9	3.6	2.2	-1.4
Chiapas	1,244.97	1,306.08	4.9	4.6	4.0	-0.7
Chihuahua	1,178.11	1,609.31	36.6	4.4	4.9	0.5
Distrito Federal	344.22	325.93	-5.3	1.3	1.0	-0.3
Durango	327.90	406.95	24.1	1.2	1.2	0.0
Guanajuato	753.51	966.58	28.3	2.8	2.9	0.1
Guerrero	614.17	783.35	27.5	2.3	2.4	0.1
Hidalgo	241.95	253.66	4.8	0.9	0.8	-0.1
Jalisco	849.94	1,257.08	47.9	3.2	3.8	0.7
Estado de México	601.08	765.83	27.4	2.2	2.3	0.1
Michoacán	2,583.66	3,572.34	38.3	9.6	10.9	1.3
Morelos	540.68	796.50	47.3	2.0	2.4	0.4
Nayarit	730.09	848.96	16.3	2.7	2.6	-0.1
Nuevo León	462.70	452.89	-2.1	1.7	1.4	-0.3
Oaxaca	846.65	1,032.05	21.9	3.2	3.1	-0.0
Puebla	1,156.30	1,353.61	17.1	4.3	4.1	-0.2
Querétaro	88.73	168.54	89.9	0.3	0.5	0.2
Quintana Roo	57.28	137.13	139.4	0.2	0.4	0.2
San Luis Potosí	873.94	929.10	6.3	3.3	2.8	-0.4
Sinaloa	2,443.01	2,754.74	12.8	9.1	8.4	-0.7
Sonora	1,052.34	1,540.61	46.4	3.9	4.7	0.8
Tabasco	1,004.90	789.80	-21.4	3.7	2.4	-1.3
Tamaulipas	769.80	1,131.84	47.0	2.9	3.5	0.6
Tlaxcala	53.84	74.50	38.4	0.2	0.2	0.0
Veracruz	4,186.78	4,891.34	16.8	15.6	14.9	-0.7
Yucatán	322.13	410.00	27.3	1.2	1.3	0.0
Zacatecas	1,047.64	1,382.70	32.0	3.9	4.2	0.3

Source: SAGARPA/SIAP (2016).

## Integrity of Shipments

Several meat distributors and meat inspectors voiced concerns about managing the integrity of meat shipments between U.S. packing plants and the border. On occasion, meat shipments are rejected at the border by government inspectors or by the quality-control staff of private firms due to spilled and/or spoiled product. One meat distributor described how spills occur because meatpackers and/or distributors improperly load product or use insufficient packing materials. Poorly loaded shipments can be damaged by routine truck movements, like a sudden stop. One private-company representative indicated that as much as 12 percent of its meat shipments to the border are compromised due to cutting corners in loading trucks and insufficient use of proper packing materials. Air-filled bags, similar to air mattresses, can be placed between the large boxes on pallets to cushion the movement of product and prevent avoidable spillage.

In Mexico, military inspections at designated highway checkpoints (PRECOS—Puestos de Control Estratégico) present an additional challenge to maintaining the timely flow of commerce and the integrity of agricultural shipments destined for export. Such inspections are inevitable, sometimes preceded by long waiting times, and are another area for potential improvement. SAGARPA has invested resources with the Secretariat of National Defense (SEDENA—Secretaría de Defensa Nacional) to reduce the logistical impact of these inspections. Recent investments by SAGARPA at the checkpoints in Querobabi, Sonora, and La Coma, Tamaulipas include the installation of nonintrusive inspection technologies and the training of personnel on how to avoid contaminating merchandise and compromising food safety.

## Areas of Opportunity

Based on information collected via the interviews and supplemental information drawn from publicly available sources, six areas of opportunity for making U.S.-Mexico agricultural trade more agile suggest themselves, including:

- Agriculture-related aspects of border crossings and inspections,
- Pre-clearance and pre-inspection systems and joint inspection facilities,
- Further development of risk-based inspection systems,
- Advance preparations for new transportation facilities and new shipment routes,
- Complementary activities for Single Window Environments, and
- Creation of formal avenues for regulatory innovation.

### Attention to agriculture-related aspects of border crossings and inspections

The border crossing and inspection process is a critical control point in the shipment of agricultural goods from origin to destination. Problems at this juncture can impede the flow of agricultural trade, leading to higher transaction costs, slower transit times, and even outright losses of product due to spoilage or slippage. At the same time, the certification and inspection of agricultural imports serve to validate that these products may be safely consumed and do not present an unacceptable risk to the importing country's plant and animal resources.

Both government and the private sector have roles in making this process work. Government must have the ability to conduct inspections consistently, both over time and at different ports of entry, to discourage port-shopping by shippers and to ensure meaningful inspections. Several interviews touched upon past problems with the consistency of inspections for specific commodities, such as Asian vegetables destined for the United States and cattle hides destined for Mexico. Such inconsistency can be addressed by the direct monitoring and supervision of inspectors or the provision of additional, product-specific training seminars for inspectors. Additional efforts by the two governments to explain to industry what they do to foster consistency in inspection procedures might help to correct any misconceptions. At the same time, border cities compete for the construction of border infrastructure and for cross-border commercial activity, and officials at each port of entry have some discretion to adapt their operations to local conditions.

One challenge for the public sector is to find the appropriate balance between staffing levels, improved risk-based regulatory frameworks, and the use of information technology systems. Personnel must have the specialized knowledge and skills—such as identification of insects, collection and testing of samples, and familiarity with all agricultural product standards—for carrying out inspections. Several U.S. inspection offices, during our visits, were awaiting the arrival of newly hired staff, but staffing levels were represented as sufficient. In Mexico, the Government has increased its capacities through third-party activities in its Verification Unit and secured approval from the Secretariat of Treasury and Public Credit (Secretaría de Hacienda y Crédito Público) for temporary positions. In addition, each Government requires up-to-date information sets—such as lists of plants authorized to export meat and the correct and precise identifiers of the farm or farms

where the produce were grown—in order to regulate bilateral agricultural trade. This point was underscored in conversations with personnel in both U.S. and Mexican regulatory authorities.

The private sector requires complete and accurate documentation about the products it trades from one country to the other. Such documentation is indispensable to passing inspection, the functioning of risk-based screening tools such as the FDA’s PREDICT, and investigating outbreaks of foodborne illnesses. In addition, the private sector must ensure that agricultural products traded between the two countries remain in their optimal condition from origin to destination. These tasks fall to individual firms, but one firm’s problems can hamstring other firms in international trade. For instance, a truck carrying a rejected shipment adds to traffic congestion and diverts inspectors who could be expediting another shipment that conforms to regulatory requirements. By this reasoning, activities such as refresher courses for agricultural exporters on how to comply with U.S. and Mexican regulatory requirements could generate benefits for all trade participants.

### **Pre-clearance and pre-inspection systems and joint inspection facilities**

The design of U.S. and Mexican inspection operations reflects creative approaches to locating some aspects of the inspection process away from the border. For example, Mexico pre-clears fruit and vegetable imports from the United States at private-sector concessions located on the U.S. side of the border. Other examples include the U.S. pre-clearance program for irradiated mangoes and the joint facility in Tijuana, Mexico, that is currently being pilot-tested for pre-inspecting fruit and vegetable imports from Mexico. Similar facilities could be considered at other ports of entry for north- or southbound agricultural shipments. Pre-inspection could also be extended to the inspection of trucks and semi-tractor trailers used in short-haul, cross-border trucking, as some in Mexico have proposed. Such an arrangement might reduce the number of traffic stops experienced by Mexican drivers of short-haul trucks on the U.S. side of the border.

### **Further development of risk-based inspection systems**

The U.S. and Mexican Governments continue to develop, operate, and refine risk-based inspection systems, such as the National Agriculture Release Program (NARP) operated by APHIS and CBP, FDA’s Predictive Risk-based Evaluation for Dynamic Import Compliance Targeting (PREDICT), and the FSIS sampling and re-inspection system in the United States and the Integral System of the Inspection Service (SISI) and Trusted User (UCON) program in Mexico. Expanded outreach to industry explaining how these systems work and how businesses can best operate in these environments would enhance these efforts. First, it would help to address any public misconceptions about those systems. Second, businesses whose shipments are subject to inspections would be better able to provide the complete and accurate information that is needed for these systems to function properly. This in turn would help to ensure that the risks associated with a particular shipment are properly scored, to the potential benefit of both traders and regulators. Third, greater outreach might stimulate suggestions from the private sector on how to improve existing risk-based inspection systems.

### **Advance preparations for new transportation infrastructure and new shipping routes**

The construction of new transportation infrastructure and the development of new inland shipping routes inevitably affect the demand for inspection services, leading to disproportionate growth of U.S.-Mexico agricultural trade across commodities, ports of entry, and exporting countries. This

disproportionate growth can be anticipated by the U.S. and Mexican governments as they adapt their border operations to new trade patterns. In particular, the two Governments can work in advance to develop the logistics and inspection protocols needed at the new facilities and to prepare for possible changes in trade volumes across ports of entry.

## Complementary activities for Single Window Environments

The U.S. and Mexican Governments are committed to the further operation and refinement of their Single Window Environments: ACE and Ventanilla Única. This commitment creates an opportunity to implement complementary activities designed to make fuller and more complete use of these systems.

First, the two Governments could use their Single Window systems as platforms for streamlining and simplifying the administrative requirements for bilateral agricultural trade. This effort could include not only the completion of ongoing projects for instituting E-certs for the full range of agricultural products, but also the consolidation or elimination of some types of documents and increasing the period of validity for certain documents. The practical convergence of the two Single Window systems would facilitate the exchange of information and eliminate unnecessary differences between the U.S. and Mexican regulatory systems. Efforts to streamline and simplify administrative requirements would benefit from the insights of the private sector.

Second, each Government could organize workshops to train the private sector in navigating the Single Window systems. While Ventanilla Única has been in operation since 2012, the U.S. system—ACE—is not scheduled to be fully implemented until the end of 2016, with intermediate deadlines for its mandatory use met in 2015 and 2016.

## Creation of formal avenues for regulatory innovation

Finally, proper avenues for innovative feedback on regulatory processes pertaining to U.S.-Mexico agricultural trade would formalize many of the micro-level ideas proposed in the interviews for making U.S.-Mexico agricultural trade more agile. Creation of these avenues would ensure the consideration of a fuller range of proposals, particularly from the private sector.

A number of these ideas would require new approaches to border inspections and processes. For example, many interview participants suggested that there are unexploited opportunities to reduce the amount of time required to sample and test agricultural shipments. Locating laboratories closer to the border would reduce the transit time from sampling to testing. Already, the FDA has several mobile laboratories and deploys them at ports such as Nogales during peak import seasons. The use of officially recognized and certified laboratories operated by private firms or academic institutions and located near the border is another possible approach and one that the Mexican Government has adopted for some of its testing needs. In addition, new technologies may reduce the amount of time required to complete tests and even make it possible to relocate some tests to the port of entry itself.

Aligning border facility hours more closely with the private sector's operating hours of business would be welcomed by interview participants, some of whom envision a border that is open to agricultural trade 24 hours a day, 7 days a week. However, a round-the-clock border is not without its tradeoffs in terms of costs, staffing, and quality of inspections.

## References

- Aguilar, Julián. 2014. "In Laredo, a Quiet Symbol of Closer Ties With Mexico." *New York Times*. March 13. [http://www.nytimes.com/2014/03/14/us/in-laredo-a-quiet-symbol-of-closer-ties-with-mexico.html?\\_r=0](http://www.nytimes.com/2014/03/14/us/in-laredo-a-quiet-symbol-of-closer-ties-with-mexico.html?_r=0) (accessed April 15, 2015).
- Asociación de Agricultores de Río Culiacán (AARC). 2014. *AgroParque AARC*. PowerPoint presentation. July 25.
- Burfisher, Mary E., Robert M. House, and Suchada V. Langley. 1992. "Free Trade Impacts on U.S. and Southern Agriculture." *Southern Journal of Agricultural Economics* 24(1) (July): 61-78.
- Calvin, Linda, and Verónica Barrios. 1998. "Marketing Winter Vegetables from Mexico." U.S. Department of Agriculture, Economic Research Service, Vegetables and Specialties Situation and Outlook Report, No. VGS-274, April.
- City of Laredo. 2015. "Executive Summary: Mexican Customs Pre-clearance at the Laredo International Airport." <http://www.cityoflaredo.com/airport/Customs/Customs-Mexican.pdf> (accessed April 15, 2015).
- Coyle, William T. 2000. "Transportation Bottlenecks Shape U.S.-Mexico Food and Agricultural Trade." U.S. Department of Agriculture, Economic Research Service, *Agricultural Outlook* (September): 24-31. <http://pdic.tamu.edu/pdicdata/pdfs/ao274h.pdf> (accessed February 12, 2016).
- Dibble, Sandra. 2016. "U.S., Mexico launch joint inspections in Tijuana." *San Diego Union-Tribune*. January 12. [www.sandiegouniontribune.com/news/2016/jan/12/otay-cargo-facility-streamlines-produce-shipments](http://www.sandiegouniontribune.com/news/2016/jan/12/otay-cargo-facility-streamlines-produce-shipments) (accessed March 30, 2016).
- \_\_\_\_\_. 2015. "Law clears way for joint U.S.-Mexico inspections." *San Diego Union-Tribune*. April 24. <http://www.utsandiego.com/news/2015/apr/24/legislation-firearms-mexico-joint-inspections/> (accessed May 1, 2015).
- \_\_\_\_\_. 2013. "U.S., Mexico to open joint inspection stations." *San Diego Union-Tribune*. January 2. <http://www.utsandiego.com/news/2013/jan/02/us-mexico-open-joint-inspection-stations/?#article-copy> (accessed April 15, 2015).
- "Durango-Mazatlán Hwy 40D." 2014. *International Travel News* (May): 4. <http://www.intltravel-news.com/2014/05/durango-mazatl%C3%A1n-hwy-40d> (accessed April 17, 2015).
- Ferrier, Peyton. 2014. *The Effects of Phytosanitary Regulations on U.S. Imports of Fresh Fruits and Vegetables*. U.S. Department of Agriculture, Economic Research Service, Economic Research Report No. 168, July. <http://www.ers.usda.gov/publications/err-economic-research-report/err168.aspx> (accessed August 20, 2014).
- Fox, Alan K., Joseph F. Francois, and Pilar Londoño-Kent. 2003. "Measuring Border Crossing Costs and their Impact on Trade Flows: The United States-Mexican Trucking Case." Paper presented at the 6th Annual Conference on Global Economic Analysis, The Hague, The Netherlands. April 30. <https://www.gtap.agecon.purdue.edu/resources/download/1492.pdf> (accessed April 26, 2016).

- Gobierno de la República. 2016. “Ventanilla Única: Sobre la VU: Operación.” Webpage. <https://www.ventanillaunica.gob.mx/vucem/SobreVU/Operacion/index.htm> (accessed April 1, 2016).
- Government Accountability Office (GAO). 2012. *Homeland Security: Agriculture Inspection Program Has Made Some Improvements, but Management Challenges Persist*. Report No. 12-885. September 27. <http://www.gao.gov/assets/650/648921.pdf> (accessed March 27, 2015).
- Hummels, David, and Georg Schaur. 2012. “Time as a Trade Barrier.” National Bureau of Economic Research, Working Paper No. 17758, January. <http://www.krannert.purdue.edu/faculty/hummelsd/research/time%20as%20a%20trade%20barrier.pdf> (accessed November 9, 2015).
- Investopedia. 2015. “Stock Keeping Unit – SKU.” Webpage. <http://www.investopedia.com/terms/s/stock-keeping-unit-sku.asp> (accessed May 1, 2015).
- Lee, Erik, and Christopher Wilson (eds.). 2015. *The U.S.-Mexico Border Economy in Transition*. Washington, DC: Woodrow Wilson Center for International Scholars. February. [http://www.wilsoncenter.org/sites/default/files/Border\\_Economy\\_Transition\\_Wilson\\_Lee%20%282%29.pdf](http://www.wilsoncenter.org/sites/default/files/Border_Economy_Transition_Wilson_Lee%20%282%29.pdf) (accessed July 7, 2015).
- Link, John, and Steven Zahniser. 1999. *NAFTA*. U.S. Department of Agriculture, Economic Research Service, International Agricultural Trade Reports, Situation and Outlook Series, WRS-99-1, August. [http://usda.mannlib.cornell.edu/usda/ers/WRS//1990s/1999/WRS-08-31-1999\\_NAFTA.pdf](http://usda.mannlib.cornell.edu/usda/ers/WRS//1990s/1999/WRS-08-31-1999_NAFTA.pdf) (accessed January 26, 2015).
- Marizco, Michel. 2010. “Arizona Pulls Produce Inspectors Out of Mexico.” *Fronteras: The Changing Americas Desk*. November 11. <http://www.fronterasdesk.org/content/arizona-pulls-produce-inspectors-out-mexico> (accessed April 15, 2015).
- Martinez, Aaron. 2014. “El Paso city officials, CBP sign agreement to reduce bridge wait times.” *El Paso Times*. January 24. [http://www.elpasotimes.com/news/ci\\_24982324/city-officials-cbp-sign-agreement-reduce-bridge-wait](http://www.elpasotimes.com/news/ci_24982324/city-officials-cbp-sign-agreement-reduce-bridge-wait) (accessed March 24, 2015).
- Novy, Dennis. 2013. “Gravity Redux: Measuring International Trade Costs with Panel Data.” *Economic Inquiry* 51(1, 2013): 101-121. <http://onlinelibrary.wiley.com/doi/10.1111/j.1465-7295.2011.00439.x/pdf> (accessed February 11, 2016).
- panza.rayada. 2012. "Puente Baluarte." Photograph. March 10.
- Pastor, Robert A. 2007. “Beyond NAFTA: The Emergence and Future of North America.” In Yasmeen Abu-Laban, Radha Jhappan, and François Rocher (eds.), *Politics in North America: Redefining Continental Relations* (Peterborough, Ontario: Broadview Press): 461-476.
- Portugal-Perez, Alberto, and John S. Wilson. 2010. “Export Performance and Trade Facilitation Reform: Hard and Soft Infrastructure.” World Bank, Development Research Group, Trade and Integration Team, Policy Research Working Paper No. 5261. April. <http://siteresources.worldbank.org/EXTPRAL/Resources/export.pdf> (accessed February 17, 2016).
- Prendergast, Curt. 2014a. “Ceremony marks completion of renovation at Mariposa Port of Entry.” *Nogales International* (November 18, updated version). [http://www.nogalesinternational.com/news/ceremony-marks-completion-of-renovation-at-mariposa-port-of-entry/article\\_0d123510-560f-11e4-9b8d-e3831ebbd6a2.html](http://www.nogalesinternational.com/news/ceremony-marks-completion-of-renovation-at-mariposa-port-of-entry/article_0d123510-560f-11e4-9b8d-e3831ebbd6a2.html) (accessed February 2, 2015).

- \_\_\_\_\_. 2014b. "Train takes local produce 'back to the future.'" *Nogales International* (August 12, updated version). [http://www.nogalesinternational.com/news/train-takes-local-produce-back-to-the-future/article\\_68178c08-e5b2-11e3-95f6-001a4bcf887a.html](http://www.nogalesinternational.com/news/train-takes-local-produce-back-to-the-future/article_68178c08-e5b2-11e3-95f6-001a4bcf887a.html) (accessed April 9, 2015).
- Prozzi, Jolanda, Jorge Prozzi, Juan C. Villa, Dan Middleton, and Jeffrey E. Warner. 2008. "Integration and Consolidation of Border Freight Transportation Data for Planning Applications and Characterization of NAFTA Truckloads for Aiding in Transportation Infrastructure Management: Second Year." Report No 0-5339-2, Project No. 0-5339. Performed in cooperation with the Texas Department of Transportation and the Federal Highway Administration. College Station, Texas: Texas Transportation Institute, The Texas A&M University System, July. <http://tti.tamu.edu/documents/0-5339-2.pdf> (accessed February 2, 2011).
- Salin, Delmy L., Agapi Somwaru, and Byron E. Reilly. 2008. "Logistic Barriers to U.S.-Mexico Grain and Soybean Trade." *Journal of Food Distribution Research*. Vol. 39, No. 3 (November), pp. 29-42. <http://ageconsearch.umn.edu/bitstream/55982/2/Salin.pdf> (accessed August 19, 2014).
- San Diego Association of Governments (SANDAG). 2015a. "Comprehensive Transportation Projects: State Route 11 and Otay Mesa East Port of Entry." Webpage. <http://www.sandag.org/index.asp?projectid=56&fuseaction=projects.detail> (accessed February 2, 2015).
- \_\_\_\_\_. 2015b. *SR11/Otay Mesa East Port of Entry*. [http://www.dot.ca.gov/dist11/facts/11\\_OtayEast.pdf](http://www.dot.ca.gov/dist11/facts/11_OtayEast.pdf) (accessed February 2, 2015).
- Servicio de Administración Tributaria (SAT). 2015. *Ventanilla Única*. Website. <https://www.ventanillaunica.gob.mx/vucem/index.htm> (accessed April 30, 2015).
- Secretaría de Agricultura, Ganadería, Desarrollo Rural, Pesca, y Alimentación (SAGARPA). 2015. "Acuerdo por el que se establecen los Lineamientos Generales para la autorización, operación y, en su caso, reconocimiento de los establecimientos para inspección y verificación de mercancías reguladas por la Secretaría de Agricultura, Ganadería, Desarrollo Rural, Pesca y Alimentación, a través del Servicio Nacional de Sanidad, Inocuidad y Calidad Agroalimentaria, en operaciones de Comercio Exterior." *Diario Oficial de la Federación*, April 16. [http://www.dof.gob.mx/nota\\_detalle.php?codigo=5389055&fecha=16/04/2015](http://www.dof.gob.mx/nota_detalle.php?codigo=5389055&fecha=16/04/2015) (accessed March 7, 2016).
- Secretaría de Agricultura, Ganadería, Desarrollo Rural, Pesca, y Alimentación (SAGARPA), Coordinación General de Comunicación Social. 2015. "Avanzan con éxito mecanismos para facilitar el comercio exterior de productos agroalimentarios." Press release No. 650/15, October 4. <http://www.sagarpa.gob.mx/saladeprensa/2012/2015/octubre/Documents/2015B650.PDF> (accessed November 13, 2015).
- \_\_\_\_\_. 2014. "Anuncia SAGARPA mecanismos que facilitan comercio agroalimentario." Press release No. 898/14, Nuevo Laredo, Tamaulipas, November 14. <http://www.sagarpa.gob.mx/saladeprensa/2012/2014/noviembre/Documents/2014B898.PDF> (accessed November 13, 2015).
- Secretaría de Agricultura, Ganadería, Desarrollo Rural, Pesca, y Alimentación, Servicio de Información Agro-alimentaria y Pesquera (SAGARPA/SIAP). 2016. *Sistema de Información Agroalimentaria de Consulta (SIACON)*. Machine readable database. <http://www.siap.gob.mx/optestadisticasiacon2012parcialsiacon-zip/> (accessed May 20, 2016).

Secretaría de Agricultura, Ganadería, Desarrollo Rural, Pesca, y Alimentación, Servicio Nacional de Sanidad, Inocuidad, y Calidad Agroalimentaria (SAGARPA/SENASICA). 2015. “Colaboran SAGARPA y USDA para agilizar comercio bilateral seguro de productos agroalimentarios.” Informational note. July 6. <http://www.senasica.gob.mx/?IdNot=2093> (accessed July 8, 2015).

\_\_\_\_\_. 2014a. *Guía de Importación General*. <http://www.senasica.gob.mx/default.asp?id=3779> (accessed January 13, 2016).

\_\_\_\_\_. 2014b. “Laboratorios.” Webpage. February 6. [http://www.ncacbsa.org/events/event\\_details.asp?id=695709&group=](http://www.ncacbsa.org/events/event_details.asp?id=695709&group=) (accessed November 3, 2015).

\_\_\_\_\_. 2013a. “Diagnóstico Fitosanitario.” 23 December. <http://www.senasica.gob.mx/?id=3210> (accessed November 3, 2015).

\_\_\_\_\_. 2013b. “Usuario Confiable (UCON)” and “Preguntas frecuentes.” December 23. <http://www.senasica.gob.mx/?id=5010> and <http://www.senasica.gob.mx/?id=5011>, respectively (accessed August 18, 2014).

Secretaría de Comunicaciones y Transportes. 2014. “NORMA Oficial Mexicana NOM-012-SCT-2-2014, Sobre el peso y dimensiones máximas con los que pueden circular los vehículos de autotransporte que transitan en las vías generales de comunicación de jurisdicción federal.” *Diario Oficial de la Federación*, November 14. [http://www.dof.gob.mx/nota\\_detalle.php?codigo=5368355&fecha=14/11/2014](http://www.dof.gob.mx/nota_detalle.php?codigo=5368355&fecha=14/11/2014) (accessed May 6, 2016).

Texas House of Representatives, Committee on Agriculture and Livestock. 2015. *Interim Report to the 84th Legislature*. January. [http://www.house.state.tx.us/\\_media/pdf/committees/reports/83interim/House-Committee-on-Agriculture-and-Livestock-Interim-Report-2014.pdf](http://www.house.state.tx.us/_media/pdf/committees/reports/83interim/House-Committee-on-Agriculture-and-Livestock-Interim-Report-2014.pdf) (accessed March 24, 2015).

Transportation Research Board of the National Academies. 2011. “Review of Mexican Experience with the Regulation of Large Commercial Motor Vehicles.” National Cooperative Highway Research Program, Research Results Digest No. 262, October. [http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp\\_rrd\\_362.pdf](http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rrd_362.pdf) (accessed May 6, 2016).

U.S. Department of Agriculture, Animal and Plant Health Inspection Service (USDA/APHIS). 2015a. “Mexican Hass Avocado Import Program.” *Federal Register* 80(32, February 18): 8561-8564. <https://www.federalregister.gov/articles/2015/02/18/2015-03289/mexican-hass-avocado-import-program> (accessed November 13, 2015).

\_\_\_\_\_. 2015b. “Preclearance Activities.” Webpage. May 19. <https://www.aphis.usda.gov/aphis/ourfocus/planthealth/import-information>

\_\_\_\_\_. 2014. *Import Requirements for Mango Fruit from Mexico Irradiated in Mexico Arriving into All U.S. Ports*. May. [http://www.aphis.usda.gov/import\\_export/plants/manuals/ports/downloads/FAVIR/mx\\_mango\\_t105a1.pdf](http://www.aphis.usda.gov/import_export/plants/manuals/ports/downloads/FAVIR/mx_mango_t105a1.pdf) (accessed April 15, 2015).

\_\_\_\_\_. 2013. “Frequently Asked Questions on BSE (Bovine Spongiform Encephalopathy or Mad Cow Disease).” Webpage. March 1. [http://www.usda.gov/wps/portal/usda/usdahome?contentid=BSE\\_FAQs.xml&contentidonly=true](http://www.usda.gov/wps/portal/usda/usdahome?contentid=BSE_FAQs.xml&contentidonly=true) (accessed January 13, 2016).

- U.S. Department of Agriculture, Animal and Plant Health Inspection Service, Veterinary Services (USDA/APHIS/VS). 2009. *Scrapie Flock Certification Program: USDA Scrapie Programs*. July. [http://www.aphis.usda.gov/publications/animal\\_health/content/printable\\_version/fs\\_scraftcp.pdf](http://www.aphis.usda.gov/publications/animal_health/content/printable_version/fs_scraftcp.pdf) (accessed March 24, 2015).
- \_\_\_\_\_. 2007. *Import Health Requirements of Mexico for Slaughter Sheep and Goats Exported from the United States of America*. October. [http://www.aphis.usda.gov/regulations/vs/iregs/animals/downloads/mx\\_cp\\_ov\\_sl\\_pro\\_h.pdf](http://www.aphis.usda.gov/regulations/vs/iregs/animals/downloads/mx_cp_ov_sl_pro_h.pdf) (accessed March 24, 2015).
- U.S. Department of Agriculture, Food Safety and Inspection Service (USDA/FSIS). 2015a. “Export Requirements for Mexico.” Webpage. April 16. <http://www.fsis.usda.gov/wps/portal/fsis/topics/international-affairs/exporting-products/export-library-requirements-by-country/Mexico> (accessed April 21, 2015).
- \_\_\_\_\_. 2015b. “Checklist for Importing Meat, Poultry and Processed Egg Products.” Webpage. March 24. <http://www.fsis.usda.gov/wps/portal/fsis/topics/international-affairs/importing-products/import-checklist> (accessed November 3, 2015).
- \_\_\_\_\_. 2015c. “Pathogen Reduction – *Salmonella* and *Campylobacter* Performance Standards Verification Testing.” May 12. [http://www.fsis.usda.gov/wps/wcm/connect/b0790997-2e74-48bf-9799-85814bac9ceb/28\\_IM\\_PR\\_Sal\\_Campy.pdf?MOD=AJPERES](http://www.fsis.usda.gov/wps/wcm/connect/b0790997-2e74-48bf-9799-85814bac9ceb/28_IM_PR_Sal_Campy.pdf?MOD=AJPERES) (accessed October 9, 2015).
- U.S. Department of Agriculture, Foreign Agricultural Service (USDA/FAS). 2016. *Global Agricultural Trade System*. Interactive database. <http://apps.fas.usda.gov/gats/default.aspx> (accessed April 25, 2016).
- U.S. Department of Commerce, Bureau of Economic Analysis. 2016. *National Data: GDP & Personal Income*. Interactive database. April 28. [http://www.bea.gov/iTable/index\\_nipa.cfm](http://www.bea.gov/iTable/index_nipa.cfm) (accessed April 28, 2016).
- U.S. Department of Commerce, Census Bureau. 2016. “Foreign Trade: Trade in Goods with Mexico.” Webpage. February 12. <http://www.census.gov/foreign-trade/balance/c2010.html> (accessed February 12, 2016).
- U.S. Department of Health and Human Services, Food and Drug Administration (USHHS/FDA). 2015. *Southwest Import District*. January. <http://www.fda.gov/downloads/ForIndustry/ImportProgram/UCM319687.pdf> (accessed March 24, 2015).
- \_\_\_\_\_. 2014a. “PREDICT.” Webpage. December 22. <http://www.fda.gov/ForIndustry/ImportProgram/ucm172743.htm> (accessed May 1, 2015).
- \_\_\_\_\_. 2014b. “Export Certificates.” Webpage. November 26. <http://www.fda.gov/Food/GuidanceRegulation/ImportsExports/Exporting/ucm2006911.htm> (accessed May 1, 2015).
- \_\_\_\_\_. 2014c. “Predictive Risk-based Evaluation for Dynamic Import Compliance Targeting (PREDICT).” Presentation slides. February. <http://www.fda.gov/downloads/ForIndustry/ImportProgram/UCM310772.pdf> (accessed May 1, 2015).
- U.S. Department of Health and Human Services, Food and Drug Administration, Division of Import Operations and Policy (USHHS/FDA/DIOP). 2012. *PREDICT Fact Sheet*. July 27. <http://www.fda.gov/downloads/ForIndustry/ImportProgram/UCM316476.pdf> (accessed May 1, 2015).

- U.S. Department of Homeland Security, Customs and Border Protection (USDHS/CBP). 2016a. *The ACE Basics: Document Image System*. Publication No. 1138-1015. January. [https://www.cbp.gov/sites/default/files/documents/ACE%20Basics%20-%20DIS\\_0.pdf](https://www.cbp.gov/sites/default/files/documents/ACE%20Basics%20-%20DIS_0.pdf) (accessed April 1, 2016).
- \_\_\_\_\_. 2016b. “ACE Mandatory Use Dates.” Website. <http://www.cbp.gov/trade/automated/ace-mandatory-use-dates> (accessed February 17, 2016).
- \_\_\_\_\_. 2016c. “CBP Commissioner Inaugurates Cargo Pre-Inspection Program Pilot at Mesa de Otay.” National news release, January 12. <https://www.cbp.gov/newsroom/national-media-release/2016-01-12-000000/cbp-commissioner-inaugurates-cargo-pre-inspection> (accessed February 11, 2016).
- \_\_\_\_\_. 2016d. “ACE and Automated Systems.” <http://www.cbp.gov/trade/automated> (accessed July 14, 2016).
- \_\_\_\_\_. 2015b. “Preclearance Locations.” Webpage. <http://www.cbp.gov/border-security/ports-entry/operations/preclearance> (accessed April 15, 2015).
- \_\_\_\_\_. 2015c. “Protecting Agriculture.” Webpage. <http://www.cbp.gov/border-security/protecting-agriculture> (accessed April 28, 2015).
- \_\_\_\_\_. 2014a. “National Agriculture Release Program (NARP).” Webpage. <http://www.cbp.gov/border-security/protecting-agriculture/narp> (accessed August 18, 2014).
- \_\_\_\_\_. 2014b. *Preclearance Expansion: Fiscal Year 2015 Guidance for Prospective Applicants*. September 2014. [http://www.cbp.gov/sites/default/files/documents/Final%20Preclearance%20Guidance\\_092014.pdf](http://www.cbp.gov/sites/default/files/documents/Final%20Preclearance%20Guidance_092014.pdf) (accessed February 11, 2016).
- U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics (USDOT/RITA/BTS). 2016. *Border Crossing/Entry Data: Query Detailed Statistics*. [http://transborder.bts.gov/programs/international/transborder/TBDR\\_BC/TBDR\\_BCQ.html](http://transborder.bts.gov/programs/international/transborder/TBDR_BC/TBDR_BCQ.html) (accessed March 30, 2016).
- U.S. Department of Transportation, Federal Highway Administration (USDOT/FHA). 2013. “Freight Management and Operations: Commercial Vehicle Size and Weight Program.” Webpage. <http://ops.fhwa.dot.gov/Freight/sw/overview/index.htm> (accessed January 30, 2015).
- U.S. Department of Transportation, Federal Motor Carrier Safety Administration (USDOT/FMCSA). 2015. “Acceptance of Applications for Mexican-Domiciled Long-Haul Operations.” *Federal Register*, Vol. 80, No. 10 (January 15): 2179 (accessed January 23, 2015).
- \_\_\_\_\_. 2014. “U.S.-Mexico Cross-Border Trucking Pilot Program Carrier Information.” Webpage. <http://www.fmcsa.dot.gov/international-programs/us-mexico-cross-border-trucking-pilot-program-data#with-operating-authority> (accessed January 23, 2015).
- U.S. Government Printing Office. 2015. “Title 40: Protection of the Environment. Part 180—Tolerances and Exemptions for Pesticide Chemical Residues in Food.” *Electronic Code of Federal Regulations*. November 10. [http://www.ecfr.gov/cgi-bin/text-idx?SID=652f6661f1c740545053c400dfe56616&node=pt40.24.180&rgn=div5#se40.24.180\\_141](http://www.ecfr.gov/cgi-bin/text-idx?SID=652f6661f1c740545053c400dfe56616&node=pt40.24.180&rgn=div5#se40.24.180_141) (accessed November 13, 2015).

- U.S.-Mexico High-Level Regulatory Cooperation Council (HLRCC). 2013. *U.S.-Mexico High-Level Regulatory Cooperation Council: Progress Report to Leaders*. August 15. <http://www.trade.gov/hlrcc/> (accessed May 9, 2014).
- Wilkinson, Fred. 2010. "UPDATED: Arizona suspends produce inspections in Mexico." *The Packer*. November 11. [http://www.thepacker.com/fruit-vegetable-news/updated\\_arizona\\_suspends\\_produce\\_inspections\\_in\\_mexico\\_122129324.html](http://www.thepacker.com/fruit-vegetable-news/updated_arizona_suspends_produce_inspections_in_mexico_122129324.html) (accessed April 15, 2015).
- Wilson, Christopher. 2015. "Optimizing Border Ports of Entry to Strengthen Regional Competitiveness—Infrastructure and Management." In Erik Lee and Christopher Wilson (eds.), *The U.S.-Mexico Border Economy in Transition* (Washington, DC: Woodrow Wilson Center for International Scholars, February). [http://www.wilsoncenter.org/sites/default/files/Border\\_Economy\\_Transition\\_Wilson\\_Lee%20%282%29.pdf](http://www.wilsoncenter.org/sites/default/files/Border_Economy_Transition_Wilson_Lee%20%282%29.pdf) (accessed July 7, 2015).
- World Customs Organization. 2015. "Single Window Information Store." Website. <http://www.wcoomd.org/en/topics/facilitation/activities-and-programmes/single-window/single-window.aspx> (accessed January 28, 2015).
- Woodhouse, Murphy. 2015. "Nogales also a hub for southbound produce." *Nogales International*. March 24. [http://www.nogalesinternational.com/news/nogales-also-a-hub-for-southbound-produce/article\\_3fddc770-d238-11e4-8c3c-eb57631efc7f.html](http://www.nogalesinternational.com/news/nogales-also-a-hub-for-southbound-produce/article_3fddc770-d238-11e4-8c3c-eb57631efc7f.html) (accessed April 14, 2015).
- World Trade Organization (WTO). 2016a. "Peru, Saudi Arabia Ratify Trade Facilitation Agreement." News Item, July 28. [https://www.wto.org/english/news\\_e/news16\\_e/fac\\_28jul16\\_e.htm](https://www.wto.org/english/news_e/news16_e/fac_28jul16_e.htm) (accessed August 12, 2016).
- \_\_\_\_\_. 2016b. "Trade Facilitation." Webpage. February 16. [https://www.wto.org/english/tratop\\_e/tradfa\\_e/tradfa\\_e.htm](https://www.wto.org/english/tratop_e/tradfa_e/tradfa_e.htm) (accessed February 17, 2016).
- \_\_\_\_\_. 2015. *World Trade Report 2015*. [https://www.wto.org/english/res\\_e/booksp\\_e/world\\_trade\\_report15\\_e.pdf](https://www.wto.org/english/res_e/booksp_e/world_trade_report15_e.pdf) (accessed February 11, 2016).