Y2K and International Agricultural Transportation:

Analysis of Export Markets, Import Suppliers, and Major Food Aid Recipient Countries

Prepared for USDA's Food Supply Working Group

September 1999

The information in this report was collected by U.S. Department of Agriculture (USDA) Foreign Agricultural Service (FAS) personnel serving in foreign posts. FAS personnel are not Year 2000 (Y2K) technology experts and this report should not be construed as an indicator of a country's Y2K status. The intent of this report is to provide information on progress and potential pitfalls of major trading partners of the United States with respect to receiving and shipping agricultural products on and after January 1, 2000.

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Executive Summary

In May and June, USDA collected information for a Year 2000 (Y2K) assessment of international food transportation modes in selected foreign countries. The assessment targeted 9 of the top 10 markets for U.S. agricultural exports and 7 of the top 8 suppliers of imported food products to the United States from January to March. Canada, the No. 2 market and top supplier, was not assessed due to its advanced Y2K readiness. Other countries included in the study were China, an important market, and Indonesia and Bangladesh, major food aid recipients.

Most U.S. export markets are generally in the Level 5 - "Testing" and Level 6 - "Implementation" stages of Y2K preparedness for the transportation and distribution of food. Those interviewed, including government officials and private sector operators, were confident that ocean carriers and container port terminal operators have taken appropriate steps to ensure that U.S. exports will continue without major interruptions on and after January 1, 2000. About half of the market countries reported motor carriers were in lesser stages of readiness, but that motor carriers were less vulnerable to Y2K disruptions since they are less dependent on computers.

There is some evidence that processors and distributors in countries that are highly reliant on imports plan to increase inventories due to uncertainty surrounding the date turnover. For example, Japanese trading companies have indicated they will carry an extra month's supply. While this may increase market demand in the last quarter of 1999, it will also likely result in decreased demand in the first quarter of 2000 as inventories return to normal levels.

Suppliers of food products to the United States have generally achieved high levels of Y2K readiness in the food transport sector. The supply chain of Mexican fresh winter vegetables to the United States, which relies on truck transport, as well as on the Mexican customs clearance systems, are in the latter stages of Level 4 - "Remediation" and Level 5 - "Testing." Major ocean carriers, which handle most perishable cargo, appear to be the most compliant of any of the international food transport sectors. Most imported perishable products are delivered on carriers with large, self-contained refrigerated systems and these systems are being remediated and tested along with other ship systems.

Methodology and Finding

Methodology: This Y2K analysis of international food transportation was conducted by FAS personnel in overseas posts in May and June. The information collection and analysis targeted countries that are normally among the top 10 markets for U.S. agricultural exports and top 8 suppliers of food products during the January-March time period. Canada, which is among the top markets and suppliers, was not assessed because of its advanced state of Y2K readiness. For further information on these countries, check a report by USDA's Food Supply Working Group, "Assessment of Year 2000 on the International Food Industry as it Affects the United States," on the USDA web site (http://www.usda.gov). China, an important market, and Bangladesh and Indonesia, major recipients of U.S. food aid, were also surveyed. FAS agricultural attachés were provided with names of critically important ocean shipping lines, port container terminal operators, and grain elevators in order to guide the information collection process. FAS interviewed host government officials and private sector operators, as well as researched publicly available information in the host country.

Based on the information they gathered, the assessment guidelines, and their judgment, FAS analysts assigned ratings for Readiness, Vulnerability, and Magnitude (or importance) to each mode of the international agricultural transportation system as it affects bulk or containerized imports or exports. Readiness was measured on the following scale:

> Level 1 - Beginning Awareness
> Level 2 - Awareness
> Level 3 - Assessment
> Level 4 - Remediation
> Level 5 - Testing
> Level 6 - Implementation.

Vulnerability was rated from "Low" to "High" reliance on date-dependent computer systems or embedded chips. Magnitude was rated from "Low" to "High" importance of that mode for delivery of bulk or containerized agricultural products. FAS personnel are not Y2K experts, but they did receive extensive briefing materials to prepare them to carry out this survey.

Two considerations need to be taken into account:

! Some of the information is self-reported by the government or private company managing a facility. To a certain extent, these sources may report a better picture than reality. The use of multiple sources, including customers, should increase the reliability of the assessment.
! The ports and other transportation modes have a heavy reliance on the public infrastructure, including electricity, gas, and water. Disruptions to these utilities will likely cause problems in operations, although contingency plans may minimize the effect.

Y2K Assessment Countries (in bold)
Top Markets/ Suppliers/Food Aid Recipients

**Top-Ten U.S. Export Markets
and Major Food Aid Recipients** : **Top-Eight Suppliers**

Market Country	U.S. Exports	Supplier Country	U.S. Imports
Japan	**$3.0 billion**	Canada	$1.7 billion
Canada	$1.5 billion	**Mexico**	**$1.4 billion**
Mexico	**$1.2 billion**	**Thailand**	**$400 million**
Korea	**$650 million**	**Chile**	**$380 million**
The Netherlands	**$610 million**	**France**	**$330 million**
Taiwan	**$570 million**	**Ecuador**	**$280 million**
Spain	**$400 million**	**Italy**	**$270 million**
Hong Kong	**$330 million**	**Brazil**	**$270 million**
Germany	**$320 million**		
Russia	**$300 million**		
China	**$280 million**		
Indonesia	**Food Aid Recipient**		
Bangladesh	**Food Aid Recipient**		

Note: *All dollar values cited are a 3-year average of U.S. exports or imports from January to March from 1996 to 1998.*

Findings: Major U.S. export destinations generally were in the advanced stages – Level 5 - "Testing" and Level 6 - "Implementation"– of dealing with Y2K computer problems as they relate to the transportation and distribution of food. Those interviewed were confident that ocean carriers and container port terminal operators have taken proper measures to ensure U.S. exports would continue without major interruptions on and after January 1, 2000. About half of the countries reported motor carriers are in lesser states of readiness, but those countries also reported that motor carriers are generally in the "Low" category of vulnerability and are less dependent on computers in order to move containers or product inland.

Grain port terminals, milling, and transport in market countries were rated nearly as high as the container modes, with countries at Level 5 - "Testing" in terms of readiness. Russia is the main exception among the major importers of U.S. agricultural products, ranking only Level 4 - "Remediation" for milling and Level 3 - "Assessment" or Level 1 - "Beginning Awareness" for other transport modes. This low level of progress is probably satisfactory because of the reported lack of computerization in most of the Russian food distribution industry.

Major suppliers of food products to the United States, mainly Central and South American countries, generally have already achieved very high levels of Y2K readiness in the food transport sector. However, there is some concern about Brazil, a major supplier of coffee and frozen concentrate orange juice, due to the status of its automated customs clearance system. Ocean carriers appear to be the most compliant, with many major international ocean shipping companies participating in the trade as well as a number of specialty break-bulk refrigerated vessels. Container and break-bulk ports are at somewhat lower levels of readiness, Level 4 - "Remediation," but the vulnerability level is also only at about "Medium" as computers are used for few operating functions. Motor carriers are much less dependent on computers than the other modes to bring products to the port site. A short narrative on the Mexican border situation is included, given Mexico's role as a major supplier of horticultural products.

Food aid recipients -- Indonesia, Bangladesh and Russia -- have very low levels of readiness, from Level 4 to Level 1 in the transport of both containers and grain. Fortunately, these countries which have given the least attention to potential Y2K problems also have the least dependence on computers to both receive and distribute U.S. food products.

The Transportation Working Group of the President's Council on the Year 2000 Conversion reported in July 1999 that a growing number of nations, including the United States, Canada, Mexico, Singapore, Indonesia, Australia, Germany, and the United Kingdom, have publicly stated that they will make the "Year 2000 Code of Good Practice," circular 2121 from the International Maritime Organization (IMO), the basis for Y2K enforcement policy in their ports. This circular provides port authorities with questionnaires for the exchange of information about an organization's preparations, enabling better management of vessel movement and cargo transfer during critical periods. The IMO circular covers not only ports, but also ocean shipping and terminals. The U.S. Coast Guard is party to the development of the circular and can answer questions concerning its implementation. Please also refer to the Coast Guard Y2K web site at: http://www.uscg.mil/hq/g-m/y2k.htm.

Y2K Situation Overview Based on FAS Post Interview Results

	Ocean Carriers			Container Ports			Motor Carriers			Grain Ports			Grain Mills			Grain Transport		
	Re	Vu	Ma	Re	Vu	Ma	Re	Vu	Ma	Re	Vu	Ma	Re	Vu	Ma	Re	Vu	Ma
Major U.S. Markets																		
Japan	5	M	H	5	M	H	3	L	L	5	M	H	5	M	H	3	M	L
Korea	-------------			5-6	H	H	4-6	M-H	H	5-6	H	H	4-6	M	H	4-6	L	H
Taiwan	5	M	M	5	M	M	5	L	L	5	M	M	4	L	L	5	L	L
Netherlands	5	H	H	5	H	H	6	H	H	5	H	H	5	H	H	5	H	H
Spain	5	M	H	5	M	H	5	L	H	5	M	H	5	M	H	5	L	H
Hong Kong	4	M	H	5	H	H	4	M	H	5	H	L	-------------			4	M	L
Russia	3	L-M	M	3	L-M	H	1	L	H	3	L-M	H	4	M	M	1	L	H
Germany	5-6	H	H	5-6	H	H	4-5	M-L	H	5-6	H	H	4-5	M	H	4-5	M	H
China	5	M	M	3	L-M	L-M	2	M-L	M-L	-------------			-------------			2	M-H	M
U.S. Supplier Countries																		
Thailand	4-5	H	H	4	M	H	1	L	H	-------------			-------------			-------------		
Chile	6	H	H	5	L	H	4	L	H	-------------			-------------			-------------		
Ecuador	5-4	M	H	4	M	H	1	L	L	-------------			-------------			-------------		
France	5	M	H	5	M	H	5	L	H	-------------			-------------			-------------		
Italy	6	M	H	4	M	H	4	M	H	-------------			-------------			-------------		
Brazil	5	H	H	4	M	M	2	L	H	-------------			-------------			-------------		
Food Aid Countries																		
Indonesia	3	H	M	3	M	M	2	M	H	3	M	H	4	M	H	1	L	H
Bangladesh	--	L	H	4	L	H	1	L	H	4	L	H	2	L	M	1	L	H

Re: Readiness Level   **-**   1 = Beginning Awareness**;** 2 = Awareness; 3 = Assessment; 4 = Remediation; 5 = Testing; 6 = Implementation.

Vu: Vulnerability   **-**   L = Low, M = medium, or H = high vulnerability of mode on date-dependent computer systems/chips**.**

Ma: Magnitude   **-** L = Low, M = medium, or H = high importance of mode to delivery of a particular food group.

Key Export Markets

Japan

Overview: Japan's Y2K compliance preparations for major ports, bulk and container terminal facilities, customs and pre-clearance inspection agencies, sanitary and phytosanitary inspection agencies, transportation and distribution systems, fuel, electric power, and the banking sector have been advancing rapidly, but unevenly, after a relatively late start.

According to the domestic food trading industry, Y2K problems for agricultural imports should be minimal thanks to a new information network system. Inland transportation of agricultural products may face sporadic problems, however, due to delayed Y2K remediation by small- to medium-size domestic transportation companies. In order to cope with this problem, large trading companies plan to add 1 month's worth of commodities and products to their inventories toward the end of 1999.

Bulk grain products are transported mostly by trucks from ports to mills or warehouses. Due to chronic road congestion problems in Japan, inland transportation companies do not depend on sophisticated computer systems. High-value and processed agricultural products, including fruits, vegetables, meat, and processed foods, are distributed from ports to either local public wholesale markets to be distributed further by small intermediate brokers, or directly to large supermarket chains. For example, at one public wholesale market in Tokyo, the majority of distribution transactions (more than 80 percent) are conducted by fax or telephone. The volume of trade transactions that are computerized is small and can be readily backed up by other methods. Even in the case of Y2K problems for small brokers, other communication methods could be substituted for the computerized operations. Large supermarket chains use their own distribution systems of trucking, storage, and stock management that are Y2K compliant. The large supermarket chains also plan to stock an additional month's worth of products at the end of this year to prepare for unforeseen Y2K problems both within their own systems and those of their small- to medium-size business partners.

In summary, the main computerized systems for import transactions, transportation, domestic distribution and financial transactions, which are highly vulnerable to possible Y2K problems, should be Y2K compliant by September 1999. In

contrast, independently operated computerized systems of small- to medium-size companies in the food distribution business may face potential Y2K-related troubles. Nonetheless, most of those systems can be readily backed up by other methods.

Table 1
Japanese Transport Modes Concerned With Distribution of Agricultural Processed and High-Value Products

Mode/Facility	Re	Vu	Ma	Remarks
Ocean Carriers	5	M	H	Product storage facilities are owned by major trading companies or major food processors that have completed Y2K remediation.
Ports	5	M	H	Strong ties with major trading companies.
Motor Carriers	3	L	L	Trucking industry is not highly computerized.

Table 2
Japanese Transport Modes Concerned With Distribution of Bulk Grain Products

Mode/Facility	Re	Vu	Ma	Remarks
Ports	5	M	H	Grain terminals/silos are owned by major trading companies.
Mills	5	M	H	Strong ties with major trading companies.
Grain Transport	3	M	L	Domestic delivery/distribution of grain by trucks and railroads does not rely on computer systems.

Re: Readiness Level - 1= Beginning Awareness; 2 = Awareness; 3 = Assessment; 4 = Remediation; 5 = Testing; 6 = Implementation.

Vu: Vulnerability - L = low; M = medium, or H = high vulnerability of mode on date-dependent computer systems/chips.

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Key Export Markets

South Korea

Since December 1998, the Korean transportation system has made significant advances toward Y2K compliance on the strength of government and trade association efforts in addressing identified weaknesses. High readiness levels are reported in all elements of the transportation structure, from facility hardware to port navigation to inspection agency software. Cross verification with private companies shows strong support for published government readiness rates in the transportation sector.

Table 1
Korean Transport Modes Concerned With Distribution of Agricultural Processed and High-Value Products

Mode/Facility	Re	Vu	Ma	Remarks
Ocean Carriers	1/	1/	1/	Comment: International Maritime Organization code is being implemented.
Ports	5-6	H	H	Port systems (marine and air) online to meet the government target Y2K readiness by September 1999.
Motor Carriers	4-6	M-H	H	Industry composed of larger, more technologically advanced companies engaged in remediation/ implementation stages. Government and trade associations actively working with such companies.

1/ U.S. Coast Guard, U.S. Department of Transportation, reporting on status of ocean carriers.

Re: Readiness Level - 1= Beginning Awareness; 2 = Awareness; 3 = Assessment; 4 = Remediation; 5 = Testing; 6 = Implementation.

Vu: Vulnerability - L = low; M = medium, or H = high vulnerability of mode on date-dependent computer systems/chips.

Ma: Magnitude - L = low, M = medium, or H = high importance of mode to delivery of a particular food group.

Table 2

Korean Transport Modes Concerned With Distribution of Bulk Grain Products

Mode/Facility	Re	Vu	Ma	Remarks
Ports	5-6	H	H	Marine port systems online to meet government target Y2K readiness by August.
Mills	4-6	M	H	Port operations, managed by international companies, in the implementation stages. Local mills, majority small/medium operations, still in remediation and testing modes. Expected to be Y2K compliant by fall.
Grain Transport	4-6	L	H	Sector dominated by small trucking firms. Government and trade associations actively working with such companies.

Re: Readiness Level -   1= Beginning Awareness; 2 = Awareness; 3 = Assessment; 4 = Remediation; 5 = Testing; 6 = Implementation.

Vu: Vulnerability   -   L = low; M = medium, or H = high vulnerability of mode on date-dependent computer systems/chips.

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Key Export Markets

Taiwan

In April 1998, the Taiwan Executive Yuan (EY) Y2K committee completed the preparation of a central authority, island-wide contingency plan and established a preparedness compliance schedule for central authority agencies and critical private sector companies. Taiwan financial institutions were required to complete intra-bank Y2K remediation and testing by the end of May 1999. Kaohsiung Harbor, the arrival point for approximately 60 percent of Taiwan's imports and exports, also planned to complete overall Y2K remediation and testing by the end of May. Taiwan's other two harbors (Keelung and Taichung) are considerably smaller, and completed Y2K remediation and testing in March 1999.

The Evergreen Marine Corporation, Taiwan's largest container ship company, owns more than 100 ships. According to Evergreen managers, Y2K preparedness testing for all ships was finished in May 1999. Evergreen owns nine different models of ships. In addition to in-house remediation and testing, Evergreen has obtained Y2K compliance certification from the Japanese Maritime Association for each of the nine models. The Yuanming Marine Transport Corporation, Taiwan's second largest container carrier company, is partially owned by the Taiwan central authorities. All central authority entities must follow strict schedules to ensure Y2K compliance. The other six major container carrier companies are Taiwan Stock Exchange (TSE) listed companies and must comply with TSE Y2K preparedness requirements. All together, these eight companies are responsible for more than 80 percent of Taiwan's container cargo.

Y2K remediation and testing of the Taiwan electronic customs clearance system were completed in October 1998 and have twice been audited and evaluated for Y2K preparedness by the EY Y2K Committee. The Taiwan agency responsible for health inspections of imported animals and plants is already Y2K compliant. The agency responsible for food safety inspections of imported food is working toward Y2K compliance.

Taiwan's biggest grain-handling company, responsible for discharging and storing 91 percent of all bulk commodity imports, completed Y2K testing at the end of April 1999, and has received Y2K compliance certification from the TSE. Imported grain is transported from ports to processing plants by rail or truck, or

both. Trains used to transport grain are not highly susceptible to Y2K problems. Trucks do not depend on automated or computerized systems and are not vulnerable to Y2K problems. Approximately 50 percent of all soybean imports go to Taiwan's largest soybean processing plant in southern Taiwan. That company is 90 percent finished with Y2K remediation, and planned to begin Y2K compliance testing in July. The seven largest wheat mills, responsible for manufacturing more than one-third of Taiwan's flour, are aware of Y2K compliance issues, and are working toward Y2K compliance. At least 80 percent of the feed production operations are not vulnerable to Y2K problems.

Processed product imports, in general, are not highly susceptible to disruptions resulting from Y2K noncompliance.

Table 1
Taiwan - Transport Modes for Distribution of Agricultural Processed and High-Value Products

Mode/Facility	Re	Vu	Ma	Remarks
Ocean Carriers	5	M	M	If Y2K-derived disruptions occur, they will likely be short-lived, and their impact of medium magnitude because inventories are sufficient to meet short-term demand.
Ports	5	M	M	Taiwan ports rely heavily on Electronic Data Interchange to quickly unload/load cargo and for customs clearance. Refrigerated containers rely heavily on an uninterrupted power supply.
Motor Carriers	5	L	L	Inland transportation systems are not highly computerized, and are not very susceptible to Y2K problems.

Re: Readiness Level - 1= Beginning Awareness; 2 = Awareness; 3 = Assessment; 4 = Remediation; 5 = Testing; 6 = Implementation.
Vu: Vulnerability - L = low; M = medium, or H = high vulnerability of mode on date-dependent computer systems/chips.
Ma: Magnitude - L = low, M = medium, or H = high importance of mode to delivery of a particular food group.

Table 2
Taiwan - Transport Modes for Distribution of Bulk Grain Products

Mode/Facility	Re	Vu	Ma	Remarks
Ports	5	M	M	Taiwan ports rely heavily on Electronic Data Interchange to quickly unload/load vessels and for customs clearance.
Mills	4	L	L	In general, reliance on automated and programmable systems is low.
Grain Transport	5	L	L	Inland transportation systems are not highly computerized, and are not very susceptible to Y2K problems.

Re: Readiness Level - 1= Beginning Awareness; 2 = Awareness; 3 = Assessment; 4 = Remediation; 5 = Testing; 6 = Implementation.

Vu: Vulnerability - L = low; M = medium, or H = high vulnerability of mode on date-dependent computer systems/chips.

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Key Export Markets

The Netherlands

Ocean Carriers/Inland Navigation: In order to enter the port of Rotterdam, all carriers must show a "millennium proof certificate." As inland navigation is extremely important to the Dutch economy, the government teamed up with insurance companies to devise a checklist to ensure that ships are millennium proof. The checklist will serve as an unofficial, but registered, document when entering the inland waterways.

Dutch Ports: During the critical period, 14 hours before and after midnight at the turn of the century, the port management expects about 150 seagoing vessels and 500 freight barges will want to make use of the port. Ships entering the port of Rotterdam must show that they are millennium proof and take into consideration safety margins that are greater than normal. Measures taken are reportedly in agreement with the U.S. Coast Guard and the International Maritime Organization.

Dutch Motor Carriers: The Association of Transport and Logistics does not foresee problems with the actual transport of products, where an estimated 98 percent is considered millennium proof. However, the logistical software programs may cause problems.   It is expected that these problems will occur with the smaller companies that will not have a major impact on the transport of goods. The important transportation companies, e.g., van Gent en Loos and Nedloyd, are all ready to switch to the 21st century.

Dutch Mills: The milling industry has been working steadily on the Y2K problem. Priority and action lists were prepared and stocks of major bulk commodities increased. Both suppliers and buyers were contacted and requested to supply information concerning their Y2K vulnerability. On the basis of this information, contingency plans were elaborated. Tests have already been conducted in major mills and, where necessary, new software has been ordered. Main mills have installed new software or are in process of doing so. The milling industry is dependent on energy (electricity supply), and in case this supply will be interrupted, alternative scenarios have been prepared. It is estimated that the industry is prepared at the 90 percent level. Nevertheless, contingency and emergency plans have been prepared in case problems occur.

Dutch Grain Transport: Grain transporters do not anticipate serious problems and expect that their ships will arrive safely in the harbor. However, they depend on others in the chain, such as transshipping companies. The Organization of Dutch Grain Shippers is closely monitoring the developments with regard to the millennium bug.

Table 1
Dutch Transport Modes for the Distribution of Processed and High-Value Agricultural and Grain Products

Mode/Facility	Re	Vu	Ma	Remarks
Ocean Carriers/ Inland Navigation	5	H	H	--
Ports	5	H	H	--
Motor Carriers	6	H	H	--
Mills	5	H	H	--
Grain Transport	5	H	H	--

Re: Readiness Level - 1= Beginning Awareness; 2 = Awareness; 3 = Assessment; 4 = Remediation; 5 = Testing; 6 = Implementation.

Vu: Vulnerability - L = low; M = medium, or H = high vulnerability of mode on date-dependent computer systems/chips.

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Key Export Markets

Spain

Summary: Based on comments from government and private sector officials, U.S. agriculture exporters face limited risk of being affected by a Y2K failure in Spain's ports and related import infrastructure. In general, Spain's logistics and food transportation systems are probably between Level 3 -"Assessment" and Level 6 - "Implementation." Smaller trading firms (importers and brokers) and inland transportation carriers are probably at the lower end of this scale, but this group is also the least vulnerable to a Y2K-related failure. Most government institutions, including those related to port management and border controls, are at Level 4 - "Remediation" to Level 5 - "Testing." In fact, Spain's Y2K Commission established June 30 as the deadline for completing testing at government institutions. The multinational trading firms, which handle more than half of the value of the agricultural trade with Spain (soybeans, grains, and by-products), are in the implementation phase, and do not believe that Y2K would disrupt their transactions.

Ocean Carriers and Spain's Ports: The directorate general for Commercial Maritime Transportation is upgrading its entire computer system to be Y2K compliant. This should ensure that booking, routing, unloading schedules, etc., are not hampered by Y2K problems. Furthermore, Spain's Transportation Ministry reported that a plan to prevent any Y2K impact on ocean transportation was to be tested and implemented by June 1, 1999. Customs agencies, including the health and phytosanitary inspection services, reported that they are also following the government guidelines on Y2K testing and implementation. Transportation and maritime authorities said, based on their information and monitoring, trade disruption would be minimal, if any. Furthermore, private companies maintain that they have checked throughout the entire freight handling pipeline to ensure that Y2K would not impact seagoing freight or freight unloading.

Spain's Motor Carriers: Virtually all of Spain's inland agricultural freight (both bulk and high-value products) is transported by motor carriers and little, if any, is by rail. The motor carriers are medium-size companies, often organized in regional pools operating similarly to a service cooperative. While reports indicate that Spain's smaller companies have made only minor Y2K preparations, in the case of the truck transport companies, they are also the least vulnerable.

These carriers operate independently, with a low level of dependence on computers. In the event of any local Y2K failure, other means of communication, e.g., fax or telephone, could likely remedy the situation relatively quickly. Regarding fuel supply for the carriers, the probability of a Y2K failure is considered to be low. The principal private petroleum/fuel oil distributor (REPSOL) reports that its relevant systems are Y2K compliant.

Spain's Mills: Grain traders and processors (large multinationals) report that their systems are Y2K compliant. They said the Y2K phenomenon "would not be a problem" for their operations. To demonstrate their conviction that it would not affect their operations, the traders have already contracted for grain purchases through April 2000. The probability of any of their transactions being affected by a Y2K failure related to the financial system is also considered to be low. Large banks expect to be 100 percent by July 1.

Table 1
Spain - Transport Modes for Processed and High-Value Products

Mode/Facility	Re	Vu	Ma	Remarks
Ocean Carriers	5	M	H	About 97 percent of U.S. agricultural exports to Spain are sent by ship.
Ports	5	M	H	An estimated 70 percent of U.S. agricultural exports to Spain enter via the ports of Valencia or Barcelona.
Motor Carriers	5	L	H	Virtually all of Spain's agricultural inland freight is done with truck.

Re: Readiness Level -   1= Beginning Awareness; 2 = Awareness; 3 = Assessment; 4 = Remediation; 5 = Testing; 6 = Implementation.

Vu: Vulnerability   -   L = low; M = medium, or H = high vulnerability of mode on date-dependent computer systems/chips.

Ma: Magnitude   -   L = low, M = medium, or H = high importance of mode to delivery of a particular food group.

Table 2
Spain - Transport Modes for Bulk Products

Mode/Facility	Re	Vu	Ma	Remarks
Ports	5	M	H	An estimated 70 percent of U.S. agricultural exports to Spain enter via the ports of Valencia or Barcelona.
Mills	5	M	H	Virtually all of Spain's agricultural inland freight is done with truck.
Grain Transport (internal)	5	L	L	Virtually all of Spain's inland grain transport is done with truck.

Re: Readiness Level - 1= Beginning Awareness; 2 = Awareness; 3 = Assessment; 4 = Remediation; 5 = Testing; 6 = Implementation.

Vu: Vulnerability - L = low; M = medium, or H = high vulnerability of mode on date-dependent computer systems/chips.

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Key Export Markets

Hong Kong

Summary: The Hong Kong government's approach to managing the Y2K problem has been highly coordinated and relatively transparent. Hong Kong has taken timely steps to address the Y2K issue and is proceeding with a mix of governmental and industry plans to assure readiness and compliance by December 1999. The main area of concern in Hong Kong remains the small- to medium-size enterprises. As a result of the Asian financial crisis and a weaker local economy, many small- to medium-size firms have reduced their budgets for Y2K rectifications.

Transportation Sector: The two most significant transport facilities in Hong Kong related to transport of goods, including agriculture, are the container terminals (port facilities) and the new airport. The two other methods of transport into Hong Kong are by rail and trucks.

Airport: About 21 percent of Hong Kong's total external trade, in terms of value, is handled by air transport. For food, approximately 13 percent is imported into Hong Kong through the airport. Most of these goods are perishable items. The airport is fully dependent on technology-based systems. The Hong Kong Civil Aviation Department, which is responsible for the radar systems at Chek Lap Kok International Airport, is in the implementation phase. The Hong Kong Airport Authority, which is in charge of the daily operation at Chek Lap Kok, is in the testing phase. Hong Kong Air Cargo Terminal Ltd. is also in the testing phase.

Port Infrastructure: According to the Hong Kong Port and Maritime Board, more than 76 percent of Hong Kong's commercial business relies on the shipping industry. Midstream terminals or river trade account for approximately 20 percent of Hong Kong's shipping activity.   Hong Kong's ports, harbors, and shipping industries (both container and midstream terminals) are moderately to highly dependent on technology-based systems. River trade terminals are fully dependent on technology-based systems. Most of the primary shipping/cargo industry providers in Hong Kong are in the testing phase of Y2K correctional activities.

Railway and Vehicular Sector: Commercial business relies on railway and national highways that account for approximately 10 percent and 25 percent, respectively, of commercial trade. Both industries are moderately dependent on technology-based systems. The railway system is in the testing phase. Motor carriers' readiness is difficult to accurately gauge due to the large number of independent owners and the large variety and range in age of vehicles.

Please note that the sum of all categories of commercial trade is greater than 100 percent because the deliveries of goods usually depend on more than one means of transport.

Customs Clearance and Inspection: The responsibility for customs and inspection functions for food and agricultural products belongs to several government departments (agriculture and fisheries, health and customs). The Hong Kong Government mandated that all government departments, including customs and inspection functions, be Y2K compliant by June 30.

Bulk Grains: Imports of bulk grains into Hong Kong are not significant. Hong Kong generally sources processed products. Milling activities have ceased almost entirely in Hong Kong and have moved across the border. Shipments of bulk commodities destined for China generally go directly and are not transshipped through Hong Kong. Only one mill is still operational in Hong Kong, Kowloon Flour Mill, which is not computerized and is entirely mechanical. Kowloon Flour Mill is basically in the business of repackaging imported flour. The mill has a capacity of 15,000-20,000 tons a year, but produces well under that amount. The Y2K bug will have no impact on the Kowloon Flour Mill since it's not a technologically dependent operation.

Table 1
Hong Kong Transport Modes for Distribution of Agricultural Processed and High-Value Products

Mode/Facility	Re	Vu	Ma	Remarks
Ocean Carriers	4	M	H	--
Ports	5	H	H	--
Motor Carriers	4	M	H	--

Table 2
Hong Kong - Transport Modes for Distribution of Bulk Grain Products

Mode/Facility	Re	Vu	Ma	Remarks
Ports	5	H	L	--
Mills	N/A	N/A	N/A	--
Grain Transport	4	M	L	--

N/A Not Available

Re: Readiness Level - 1= Beginning Awareness; 2 = Awareness; 3 = Assessment; 4 = Remediation; 5 = Testing; 6 = Implementation.

Vu: Vulnerability - L = low; M = medium, or H = high vulnerability of mode on date-dependent computer systems/chips.

Ma: Magnitude - L = low, M = medium, or H = high importance of mode to delivery of a particular food group.

Key Export Markets

Russia

Summary: The dichotomy between parts of the food distribution system that do not use digital technology and those that use very new systems makes it unlikely that the Russian food sector will face large Y2K disruptions. However, there is a likelihood of some disruptions in ship navigation caused by failures of noncompliant onboard navigation equipment and, most significantly, flour milling. Should power outages occur, they could affect refrigeration and cold storage as well.

Ocean Carriers: Most Russian carriers do not use computers for navigation, but many foreign-owned ships do, which could disrupt trade.

Russian Ports: No facilities use embedded chips. Customs and quarantine often use pen and paper. Greatest vulnerability could be caused by possible failures in refrigeration. The new port in St. Petersburg uses Y2K-compliant technology dating from 1997. In addition, food products can be brought in through Estonia as an alternative if Russian ports are disrupted. Connections for refrigerated cars between Muunga, Estonia and Moscow are particularly good. The Russian Far East, which is particularly dependent on imports, could be more impacted by disruptions.

Russian Railroads: Railroads use almost no computer technology, but move most products through Russia.

Grain Mills: This is one area of some concern because many large mills use non-Y2K-compliant technology to control operations. In addition, awareness of the problem in most facilities is not very high although a few mills are trying to update their software. This makes it possible that milling operations will be disrupted in some large facilities.

Food Processors: Food processors either use older, noncomputerized, Soviet technology or have modern facilities deemed to be at low risk for a Y2K failure. However, some facilities modernized in the late 1980's or early 1990's may be at risk for a Y2K disruption.

Table 1
Russia - Transport Modes for High-Value Products

Mode/Facility	Re	Vu	Ma	Remarks
Ocean Carriers	3	L-M	M	--
Ports	3	L-M	H	--
Railroads	1	L	H	--

Table 2
Russia - Transport Modes for Bulk Products

Mode/Facility	Re	Vu	Ma	Remarks
Ports	3	L-M	H	--
Mills	4	M	M	--
Railroads	1	L	H	--

Re: Readiness Level - 1= Beginning Awareness; 2 = Awareness; 3 = Assessment; 4 = Remediation; 5 = Testing; 6 = Implementation.

Vu: Vulnerability - L = low; M = medium, or H = high vulnerability of mode on date-dependent computer systems/chips.

Ma: Magnitude - L = low, M = medium, or H = high importance of mode to delivery of a particular food group.

Key Export Markets

Germany

Summary: Y2K, as it relates to shipping, is being actively addressed by German federal, state, local, and port authorities. Information and navigation systems are being evaluated and tested for Y2K compliance and replaced/modified accordingly. Results of Y2K tests and development of contingency plans should be completed by mid-1999.

Ports: The authorities of the Port of Hamburg and the Port of Bremen, which includes Bremen and Bremerhaven, are identifying critical systems where problems connected with Y2K might arise, performing compliance tests, and moving to eliminate the problems. Y2K working groups have been created in the shipping and related sectors to increase awareness and identify and solve potential problems. Most federal, state, and municipal agencies with jurisdiction over the ports are in the Y2K testing and contingency planning stages. Final tests were planned for June. Of note, the Port of Bremen will be closed on January 1, 2000.

Potential problems arising from Y2K are expected to be concentrated in the smaller shipping companies, or the smaller transport and other companies servicing the ports. In this regard, port authorities and local chambers of commerce are providing experts to educate companies on addressing the Y2K issue.

Shipping Lines: The major shipping lines are actively addressing the Y2K issue. Hapag Lloyd has been undergoing a thorough testing of all its electronic systems for the past 2 years. The other major carriers have similar Y2K programs in place.

Ship owners are responsible for ensuring that their ships are Y2K compliant and they have been advised of the problem by various maritime organizations. Critical systems onboard ships that need to be Y2K compliant include navigation and steering systems; communications systems; power, loading and unloading systems; and alarm and fire fighting equipment. Shipping companies and ships entering German ports are being provided with a thorough checklist regarding Y2K compliance for their various onboard systems.   In addition to identifying where problems may occur, shipping companies are being encouraged to develop contingency plans for their crews should Y2K-related emergencies arise, including such things as manually navigating ships.

Rail and Trucking: Germany's main railroad operator, Deutsche Bahn, expects to be internally Y2K compliant well in advance of the year 2000. Of note, German rail system readiness for Y2K is dependent on the compliance of rail systems in neighboring countries. The German government reports that traffic guidance systems along federal trunk roads can be assumed to have no Y2K problems.

Warehousing and Distribution: The Hamburg Warehouse and Distribution Authorities have formed a working group to address the Y2K problem. They are testing their internal software and working to ensure that all programs and terminal machinery (including container bridges, cranes, etc.) are compliant. Companies active in this sector were required to be certified as Y2K compliant by the end of June.

Grain Mills: As a part of the logistics system of the port, the mills were required to be Y2K compliant by the mid-year and have received support and guidance from federal agencies as well as chambers of commerce.

Table 1
Germany - Transport Modes for Distribution of Agricultural Processed and High-Value Products

Mode/Facility	Re	Vu	Ma	Remarks
Ocean Carriers	5-6	H	H	--
Ports	5-6	H	H	--
Motor Carriers	4-5	M-L	H	--

Re: Readiness Level - 1= Beginning Awareness; 2 = Awareness; 3 = Assessment; 4 = Remediation; 5 = Testing; 6 = Implementation.

Vu: Vulnerability - L = low; M = medium, or H = high vulnerability of mode on date-dependent computer systems/chips.

Ma: Magnitude - L = low, M = medium, or H = high importance of mode to delivery of a particular food group.

Table 2

Germany - Transport Modes for Distribution of Bulk Grain Products

Mode/Facility	Re	Vu	Ma	Remarks
Ports	5-6	H	H	--
Mills	4-5	M	H	--
Grain Transport	4-5	M	H	--

Re: Readiness Level - 1= Beginning Awareness; 2 = Awareness; 3 = Assessment; 4 = Remediation; 5 = Testing; 6 = Implementation.

Vu: Vulnerability - L = low; M = medium, or H = high vulnerability of mode on date-dependent computer systems/chips.

Ma: Magnitude - L = low, M = medium, or H = high importance of mode to delivery of a particular food group.

Key Export Markets

China

Summary: Awareness of and vulnerability to Y2K problems vary dramatically throughout the country. In general, vulnerability is low due to the low degree of computerization. Disruptions are likely among medium- to small-size firms, but are not expected to differ much from past events that have caused market disruptions in China.

Introduction: The status of China's Y2K readiness is difficult to assess due to widely differing levels of awareness and vulnerability in different locations and different organizations. Generally speaking, the level of preparedness is highest in those areas that are most dependent on computers. Scattered failures are likely among small- and medium-size enterprises. Certain factors peculiar to China may mitigate the impact of Y2K problems on China's import infrastructure. The most important is the generally low level of computerization in most ports. Many major ports continue to calculate cargo charges, etc., using desktop calculators, and generally use computers to fill out forms that can be easily typed. Traditional seasonal shipping patterns may also have a mitigating effect.

Shipping Lines: Contacts with ocean carriers indicate that most major foreign carriers are close to completing remediation efforts. Those foreign carriers contacted also appeared to be well aware of potential Y2K problems within China, and are already establishing contingency plans. China's largest shipping line, and the largest shipper of containerized U.S. agricultural commodities, COSCO, were pursuing an ambitious schedule and planned to complete remediation efforts by the end of June. Sources at COSCO have also provided assurance that contingency plans are in place to deal with failures both within and outside the company. Industry sources indicate that the level of vulnerability among other shipping lines is extremely low as computerization is nearly nonexistent among smaller carriers.

Ports: Port facilities represent one of the largest uncertainties in the overall picture. The largest ports are the most vulnerable, but they have also made the most progress in terms of both remediation and contingency planning. Container-handling facilities are more vulnerable than the older, bulk facilities. Domestic industry officials believe that while planning for Y2K is somewhat weak, the level of vulnerability is generally quite low.

According to these sources, only four ports currently utilize Electronic Data Interchange (EDI), and even these ports are not fully dependent on computers. Very few port management tasks rely on computers, and port authorities have already established emergency plans in case of system failures.

Other Y2K infrastructure problems have the potential to affect many other areas that will in turn cause problems for the shipment of goods. Inland transportation is one of the greatest concerns. Though passenger rail service is expected to continue uninterrupted, there may be problems with freight rail services. This assessment is further confirmed by ocean freight companies, some of whom are reported to be arranging for truck transport in case freight rail failures become intolerable. Banking infrastructure appears to be less of a concern as the level of awareness and remediation efforts are considerably more advanced than in most other sectors. Domestic shippers believe that problems with customs will be minimal as EDI only recently became available with customs, and is not widely used. Chinese government sources have expressed concern with electrical power systems. Electric power disruptions are likely to be scattered and the effects are difficult to calculate. At least one private sector source has expressed satisfaction with Y2K remediation efforts in northeast China. Motor fuel supplies are unlikely to present a serious problem: China imports less than 10 percent of its oil needs, mostly by ship. None of the individuals contacted expressed a concern with respect to fuel oil supplies.

Spring Festival: One additional factor may be the annual shipping pattern surrounding the Spring Festival. Spring Festival marks the peak consumption season for a wide variety of foodstuffs. As a result, every year during the 2 to 3 months leading up to Spring Festival, imports increase markedly. In 2000, the festival is scheduled to begin in the first week of February. As a result, imports are likely to be particularly heavy during December, indicating that a substantial amount of imports will have already entered the country before January 1. This will be particularly true if shippers decide to front-load shipments in December to avoid problems during the first 2 weeks of January. Shipping companies contacted by post seemed confident that China could handle the increased traffic.

Table 1

China - Y2K Readiness of Transport Sectors Relevant to U.S. Agricultural Exports

Mode/Facility	Re	Vu	Ma	Remarks
Ocean Carriers	5	M	M	Both COSCO and foreign carriers appear to be extremely well prepared, and have undertaken both remediation and contingency planning.
Ports	3	L-M	L-M	Numeric ratings are difficult to assign due to the wide level of variation among Chinese ports.
Rail Transport	2	M-H	M	Failures appear likely for rail freight and shippers plan to rely on trucks as a backup
Motor Carriers	2	L-M	L-M	Some ocean shippers have already begun arranging motor transport as an alternative, should Y2K failures cause problems with rail transport.

Re: Readiness Level   -   1= Beginning Awareness; 2 = Awareness;
                                              3 = Assessment; 4 = Remediation; 5 = Testing;
                                              6 = Implementation.
Vu: Vulnerability   -   L = low; M = medium, or H = high vulnerability of
                                              mode on date-dependent computer systems/chips.
Ma: Magnitude   -   L = low, M = medium, or H = high importance of
                                              mode to delivery of a particular food group.

Key Import Suppliers

Thailand

Summary: Both ocean carriers and seaports in Thailand are in the process of remediation on Y2K problems. Their implementation of a readiness program will be completed in the second or third quarter of 1999, leaving enough time for testing and final adjustment. This assessment is based on interviews with transportation companies (including shipping lines, freight forwarders, truck companies, and shipping service agencies) and the ports authority of Thailand.

Ocean Carriers: Most agricultural processed and high-value products exported from or imported into Thailand are handled by container ships that are vulnerable to Y2K problems. The vulnerability of this mode is "High." Its magnitude is "High" because ocean carriers handle a high percentage of agricultural product shipments. The overseas delivery of all goods is dominated by international shipping lines. These international shipping lines are aware of Y2K problems and have established and implemented procedures to achieve Y2K compliance before year-end. Implementation of a readiness program is about 50-75 percent complete, and should be completed in the third quarter of 1999. Their readiness level is at Level 4 - "Remediation."

Thai Motor Carriers: Although motor carriers are the backbone of deliveries of high-value/processed products within Thailand, almost no truck companies rely on sophisticated computer systems. The motor carriers will be able to operate much more independently than any other mode. This mode is less vulnerable compared to other modes, and its readiness for Y2K is ranked as Level 1 - "Beginning Awareness." Magnitude is in the "High" level, as the Thai agricultural transport system is heavily dependent on motor carriers for both internal distribution and delivery/pickup at seaports.

Table 1
Thailand - Transport Modes for Distribution of Agricultural Processed and High-Value Products

Mode/Facility	Re	Vu	Ma	Remarks
Ocean Carriers	4-5	H	H	--
Ports	4	M	H	--
Motor Carriers	1	L	H	--

Re: Readiness Level - 1= Beginning Awareness; 2 = Awareness; 3 = Assessment; 4 = Remediation; 5 = Testing; 6 = Implementation.

Vu: Vulnerability - L = low; M = medium, or H = high vulnerability of mode on date-dependent computer systems/chips.

Ma: Magnitude - L = low, M = medium, or H = high importance of mode to delivery of a particular food group.

Key Import
Suppliers

Chile

**Chilean Transport Modes Concerned With Distribution of
Agricultural Processed and High-Value Products**

Mode/Facility	Re	Vu	Ma	Remarks
Ocean Carriers	6	H	H	The two largest ocean carriers shipping fruit to the United States and major fruit exporters have been working for up to 2 years to address any potential problems. Four of the five largest fruit exporters are Dole, Del Monte Fresh Fruit, Unifrutti and Chiquita.
Ports	5	L	H	Port of Valparaiso officials are testing contingency plans. Computers are used only in accounting systems. Ship cranes handle practically all cargo.
Motor Carriers	4	L	H	Exporters do not expect any problems with trucking.

Note: Other dates of concern for local industry are September 9, 1999 (9999), and February 29, 2000, the leap year. Port of Valparaiso will be closed New Year's Eve for fireworks which is a regular event.

Re: Readiness Level - 1= Beginning Awareness; 2 = Awareness; 3 = Assessment; 4 = Remediation; 5 = Testing; 6 = Implementation.

Vu: Vulnerability - L = low; M = medium, or H = high vulnerability of mode on date-dependent computer systems/chips.

Ma: Magnitude - L = low, M = medium, or H = high importance of mode to delivery of a particular food group.

Key Import Suppliers

France

Ocean carriers, ports, and motor carriers involved in the export of high-value consumer products to the United States are well prepared for the date turnover. In addition, French customs computer systems are being completely overhauled to accommodate data collection and transactions in euros. At the same time, the system is being checked for Y2K compatibility and bugs are being repaired. French customs is fully confident that its system will be operational by December and will not be affected by the millennium bug. Customs systems in ports that are not linked to the central system are also being overhauled to handle euros and Y2K.

Table 1

French Transport Modes Concerned With the Export of Agricultural Processed and High-Value Products to the United States

Mode/Facility	Re	Vu	Ma	Remarks
Ocean Carriers	5	M	H	Most ocean carriers operating from/to France are large international companies which have been working for a long time on the Y2K issue, according to their French representatives**.**
Ports	5	M	H	France's ports are essential for exports and imports to/from the United States. Under supervision of the French Ministry of Transport, major French ports are well advanced in remediation of Y2K bugs and will be ready by December 31. Emergency teams will be on duty should any problem occur. Smaller ports are probably less advanced.

Re: Readiness Level - 1= Beginning Awareness; 2 = Awareness; 3 = Assessment; 4 = Remediation; 5 = Testing; 6 = Implementation.

Vu: Vulnerability - L = low; M = medium, or H = high vulnerability of mode on date-dependent computer systems/chips.

Ma: Magnitude - L = low, M = medium, or H = high importance of mode to delivery of a particular food group.

Table 1 **(cont.)**

French Transport Modes Concerned With the Export of Agricultural Processed and High-Value Products to the United States

Mode/Facility	Re	Vu	Ma	Remarks
Motor Carriers	5	L	H	The majority of French food production, imports, and exports is carried by trucks. Although not directly dependent on computerized systems, French motor carrier traffic may be slightly affected by Y2K bugs that could affect highway toll systems as well as city traffic control systems. However, impact of possible failures on traffic will be minimal due to the extensive French road network.

Re: Readiness Level   -   1= Beginning Awareness; 2 = Awareness; 3 = Assessment; 4 = Remediation; 5 = Testing; 6 = Implementation.

Vu: Vulnerability   -   L = low; M = medium, or H = high vulnerability of mode on date-dependent computer systems/chips.

Ma: Magnitude   -   L = low, M = medium, or H = high importance of mode to delivery of a particular food group.

Key Import Suppliers

Ecuador

Port, Shipping, and Motor Transport Summary: The various entities related to sea and land transport/shipping appear to be more cognizant of the implications of Y2K failures than other sectors. Private sector firms, in general, have good plans and some appreciation of external interdependencies. Public sector entities are well positioned for the transition. There is a pervasive lack of awareness with respect to the affect of embedded chips in the equipment. Heartening, though, was the warm reception to contingency planning suggestions. For the purpose of evaluating this sector, the focus was on private shipping lines, or companies which make extensive use of sea shipment; the customs process; and the Guayaquil Port which handles roughly 85 percent of cargo in and out of the country.

Additionally, and with respect to all parties concerned with the shipping sector except motor transport and small ancillary service providers, the use of manual processes to manage the movement of cargo in/out of the port cannot be considered a viable contingency planning element. This is due the complexity of the current process, to cargo volume, and to the fact that manual processes are not documented. Nor have they been tested. Finally, motor transport firms generally are not automated and not dependent on Y2K-relevant systems. They are, however, dependent on adequate fuel supplies.

Private Shipping Lines and Their Customers: The largest shipping companies are well prepared for Y2K internally, but a greater awareness of external issues would be beneficial. While telecommunications and Internet access are critical to the movement of cargo, contingency plans using direct satellite communications or dedicated service that bypasses local telecommunications have been put in place or are now being considered. Emergency power preparations generally are sufficient. Unfortunately, however, there has not been a great deal of information sharing and coordination within the industry. Also relevant to contingency planning is the fact that most large ships bunker in the United States or at another port. Bunkering in Ecuador is not common or generally required.

Customs: While the customs service has an admirable Y2K plan and appears to fully appreciate the potential for Y2K complications, the current timeline for the implementation of the plan does not allow sufficient opportunity for testing. (The programs will be brought online in November/December.) Additionally, the customs service was to be transferred from military to civilian control/operation by June 1. A period of joint operation for training purposes was part of the planned transition.

Port Operations: While services have been privatized at the port, they are not heavily automated and there are no date-dependent, embedded chips. The port authority previously used outside sources for all aspects of its technology systems, which includes Y2K remediation. This has translated into an extremely high state of Y2K readiness. A Y2K-compliant system is installed and working in tandem with the existing system. End-to-end testing is being performed. While there is no existing emergency power for the port, the port authority has released a tender for the installation of emergency generator power. There is limited dependence on the local telecommunications and radio systems are used for many functions by the port authority.

Table 1

Ecuador - Transport Modes Concerned With the Export of Agricultural Processed and High-Value Products to the United States

Mode/Facility	Re	Vu	Ma	Remarks
Ocean Carriers	4-5	M	H	Most imports of processed food and bulk commodities are made by ocean carriers, as are exports of tropical products (bananas, coffee and cocoa), including shrimp.
Ports	4	M	H	At least 90 percent of Ecuador's external trade passes through seaports.
Motor Carriers	1	L	L	Loading and unloading are manual. Refrigerated and processed food is delivered by truck domestically and to/from the seaports.

Re: Readiness Level - 1= Beginning Awareness; 2 = Awareness; 3 = Assessment; 4 = Remediation; 5 = Testing; 6 = Implementation.

Vu: Vulnerability - L = low; M = medium, or H = high vulnerability of mode on date-dependent computer systems/chips.

Ma: Magnitude - L = low, M = medium, or H = high importance of mode to delivery of a particular food group.

Key Import Suppliers

Italy

Summary: Italy has an advanced, diverse, industrial economy highly dependent on computer technology to conduct business and is widely interconnected with western Europe. The commencement of the Economic and Monetary Union (EMU) has stimulated the increase of inter-connectivity (Italian companies have already been active in cross-border mergers). The Government of Italy estimates that 65-70 percent of the public sector is already Y2K compliant or will be compliant by the year 2000. The same is true for the major portions of the private sector such as banking, insurance, and transportation.

Agriculture: The larger agricultural operations are well aware of the Y2K problem and, as with the rest of the private sector, approximately 65-70 percent are already Y2K compliant or will be compliant by the year 2000. The problem, however, is with the small- to medium-size companies. There is a general feeling that the problem will not affect them because most companies of this size are not as automated as similar companies in the United States and their computer equipment tends to have been purchased fairly recently. Despite the low level of awareness in the agricultural sector, problems should be limited to individual companies, with no major food shortages or disruptions expected.

Transportation: The Italian transportation network, encompassing ports, roads, and rail, is either dominated by international companies or under the control of the Italian government. As such, all major operations are aware of the potential for Y2K problems and are considered well on the way to resolving them. For this study, several freight forwarders and representatives of several agricultural sectors (hides and skins, cotton, grains, fruits and vegetables) were contacted. All expressed confidence both in their preparation for Y2K and in the preparations underway by their suppliers and the transportation sectors. Most of the larger companies have appointed senior managers to address the issue and, on average, they report to be 75 percent complete on implementing their plan. The companies have prepared contingency plans and are working with their suppliers and distributors to make sure that they are also prepared. Banking, finance, and transportation are listed as most critical in their view, but all those contacted expect nothing more than minor, isolated incidents from Y2K problems.

Railway: Ferrovie dello Stato (State Railway), the parastatal which provides the vast majority of rail service in Italy, depends upon computers for passenger reservations, ticketing, merchandise (computerized system for bills of lading), and for movement of trains in and out of stations. Approximately 11 percent of food and medicine transported within Italy moves by rail. Ferrovie dello Stato believes that the railroad will be able to be in Y2K compliance by late 1999. Should the railroad be unable to meet this deadline, they believe it will be possible to reprogram their computers so that, instead of arriving at the year 2000, they use "1999 bis" or "1999*."

Highway: It is estimated that while only 10 percent of food products enter and exit Italy by road, highway transportation accounts for up to 75 percent of the movement of agricultural products within the country. Italy's Autostrade (highway system company) has already updated its toll booth system so that it is Y2K compliant. It is unknown to what degree individual cities and regions are Y2K compliant; however, temporary malfunctions of traffic lights are not expected to cause significant problems as they are fairly common occurrences.

Many Italian motor carriers operate internationally within Europe and Eastern Europe and are well aware of the potential problems from Y2K. No major problems are expected, although some operations, particularly in smaller companies, may experience problems related to the scheduling of their fleet. However, this should be limited to isolated incidents and should not cause any significant problems.

Shipping/Ports: It is estimated that up to 78 percent of food and medicines are shipped to or from Italy using the port system. Contacts with the shipping officials suggest that the shipping industry is moving at a similar pace to that of the air and rail industries. No significant problems are expected, although small, localized problems may occur with individual firms or operations. Italian ports play a major part in the import and export of food products. Contacts suggest that the major ports are well on the way to resolving any potential Y2K problems. Small, isolated problems may occur, but they are not expected to cause major delays or problems.

Table 1

Italy - Transport Modes Concerned With the Export of Agricultural Processed and High-Value Products to the United States

Mode/Facility	Re	Vu	Ma	Remarks
Ocean Carriers	6	M	H	--
Ports	4	M	H	--
Motor Carriers	4	M	H	--

Re: Readiness Level - 1= Beginning Awareness; 2 = Awareness; 3 = Assessment; 4 = Remediation; 5 = Testing; 6 = Implementation.

Vu: Vulnerability - L = low; M = medium, or H = high vulnerability of mode on date-dependent computer systems/chips.

Ma: Magnitude - L = low, M = medium, or H = high importance of mode to delivery of a particular food group.

Key Import Markets

Brazil

Summary: Brazilian exports and imports of agricultural and food products will likely suffer some interruptions, due mostly to the possible failure of the automated customs system for import/export licensing. Power failures will likely also affect some port operations. Internal transportation of agricultural and food products is done mostly by truck, which is not dependent on computer systems.

Overall, most of the transport sectors which distribute food throughout Brazil and to overseas markets are between Level 2 - "Awareness" and Level 5 - "Testing." This wide range in the Readiness Index is due to the large spectrum of companies operating in the export/import business, including large multinational and national transport companies, and small- and medium-size companies (truck owners, freight forwarders, etc.) that normally do not rely on computer systems.

Brazilian Motor Carriers: Brazilian motor carriers, mostly trucks, provide a large share of all grain and oilseeds movements to ports and processing facilities within the country. These trucks, with very few exceptions, do not rely on computer systems for their loading/unloading operations. During December and January, exports of bulk grains and oilseeds to ports and processing facilities are very low because this period is during the off-season for the majority of Brazil's bulk export crops. The peak of the export season is during April-July. Generally, transportation needs for wheat imports do not involve transportation at long distances because most of the mills are at or near the ports, and distribution does not depend on computer systems. (The majority of wheat imports during December and January are from Argentina. The market window for U.S. wheat is usually June-September.) High-value/processed food products are also generally transported by truck, and are also not dependent on computer systems.

Ocean Carriers: Most container ships with export/import operations in Brazilian ports are at Level 5 - "Testing." Most of their concerns are with the Brazilian customs automated licensing system for imports/exports.

Brazilian Ports: The automated customs import/export system called SISCOMEX is the biggest concern of some Brazilian importers and exporters. SISCOMEX is the automated system which controls all import and export licensing for the Brazilian government, and which affects all products, regardless of origin. Some exporters and importers do not believe that customs will be ready for Y2K. Generally, Brazilian companies are planning to increase their stocks of parts, inputs, and finished products by the end of November to avoid possible shortages of products early in the Year 2000 due to failure of SISCOMEX combined with possible power failures. Large Brazilian food companies, mostly multinationals, are also planning to increase their stocks of agricultural inputs as a means of avoiding possible shortages early in the year due to delays in port deliveries.

Table 1
Brazil - Transport Modes Concerned With the Import/Export of Agricultural Processed and High-Value Products From/to the United States

Mode/Facility	Re	Vu	Ma	Remarks
Ocean Carriers	5	H	H	Most ocean carriers depend on computer systems for vessel operating systems.
Ports	4	M	M	For bulk grains and oilseeds, equipment used is usually not computer dependent.
Motor Carriers	2	L	H	Bulk grains and oilseeds, as well as containerized food delivery by trucks, do not rely on sophisticated computer systems.

Re: Readiness Level -   1= Beginning Awareness; 2 = Awareness;
3 = Assessment; 4 = Remediation; 5 = Testing;
6 = Implementation.
Vu: Vulnerability   -   L = low; M = medium, or H = high vulnerability of
mode on date-dependent computer systems/chips.
Ma: Magnitude   -   L = low, M = medium, or H = high importance of
mode to delivery of a particular food group.

Key Import Suppliers

Mexico

Summary: Based on recent contact with the key industry representatives, Mexico's fresh fruit and vegetable sector has progressed from Level 3 - "Assessment" and Level 4 - "Remediation" to Level 5 - "Testing" and Level 6 - "Implementation." This industry, as one of the most important in Mexico, remains aware of theY2K issue and has taken steps to prepare for it.

Experts have stated that most small- and medium-size Mexican companies do not employ cutting-edge technology and thus the impact of Y2K is expected to be minimal. In these cases, those businesses will count on "Y2K kits" rather than buy all new equipment and software. This would allow them to be compliant with the new millennium requirements.

The same situation is found with many of the larger fresh vegetable and fruit companies. The exceptions are those companies that use sophisticated equipment, such as machines used to select color and size of export tomatoes. They are confident that the equipment will be operational by January 1.

The Confederation of Agricultural Associations of Sinaloa State (CAADES), one of Mexico's most important produce associations, stated that the lack of money precludes them from purchasing new software. This organization's leaders are looking for the best solution, but have not developed a contingency plan to date.

Transportation: As with CAADES, the National Union of Traders and Producers of Mexico City's main wholesale produce market (Centro de Abastos) stated most of its products are shipped by truck and some by air and trade won't be affected. As with CAADES, leaders of this organization also are well aware of the Y2K issue.

Customs: FAS/Mexico's Nuevo Laredo office confirmed that the Nuevo Laredo Customs Agents Association has declared its systems fully operational and Y2K compliant. Furthermore, Mexico's National Commission for Y2K Conversion reported that Mexico's Customs Agency (Secretaria de Hacienda y Credito Publico) has stayed on schedule. Its technicians are performing testing stage activities to improve their systems and will

implement these changes at the border once the testing is completed.

In summary, CAADES should be further along in preparedness planning. However, there is cautious optimism that the sector is far enough along in the preparedness planning and implementation phases to meet the Y2K challenge without major trade interruptions.

Major Food Aid Recipients

Indonesia

Summary: Indonesia's ports and import/export infrastructure are at Level 1 - "Beginning Awareness" and Level 3 - "Assessment." Only the most sophisticated individual firms have begun Level 4 - "Remediation." Indonesia's low level of computerization and mechanization suggests that the import/export infrastructure's vulnerability to date-dependent computer systems is "Low" to "Medium." Contacts are chiefly concerned with the availability of fuel and electrical power. In both cases, the state-owned companies responsible have assured customers that there will be an adequate fuel supply and power.

Transportation Overview: Indonesian ports use the Electronic Data Interchange (EDI) system to track cargo and shipping for customs and tariff purposes.   This system was certified as Y2K compliant earlier this year.   Distribution and tracking of cargo before and after shipment from the ports are most often done by physical inspection and recorded by ledger. Individual shipping companies, brokers, and traders are computerized to varying degrees. Most are only computerized enough to interact with the EDI system.   Of those interviewed, all were at least at Level 2 - "Awareness." Most knew that EDI had been certified Y2K compliant. Most all believed their methods were not computerized enough to be vulnerable.

The vulnerability of the domestic distribution system to date-dependent computer systems is very low. Computers are used to varying degree by individual food and agricultural businesses to manage their own inventory but little else.   The distribution system is dependent on telephone and fax technology. Orders and receipts are made and returned by fax or hand delivery.

There is a part of the distribution system that is controlled by large established companies, and these companies are very aware of the problem. They are at Level 4 - "Remediation." Overall the food supply is somewhere between awareness and assessment, but the vulnerability level is very low.

Container Port Operations: The Port of Jakarta reports being assured by most carriers and maritime associations that all ocean-going carriers will be Y2K compliant by the end of the year. Realistic estimates suggest that at least 80 percent will be compliant. As for port operations, such as customs, Indonesian

ports use the EDI system, which has been certified compliant. Contacts report that the container-handling equipment, used for cotton and high-value product imports, is not vulnerable to date-dependent computer problems. The machinery is described as unsophisticated single-task machinery. Other port activities, such as cargo handling and distribution, are not computerized and have "Low" to "Medium" vulnerability. Motor carriers are both at a "Low" level of readiness and a "Low" level of vulnerability. Most, if not all, dispatch and delivery communication is handled by phone and fax and recorded by ledger. Their major concern is the availability of fuel and the security of the Indonesian electric power supply.

Bulk Grain Transportation: Port readiness is at Level 2 - "Awareness" or Level 3 - "Assessment" and at a "Medium" level of vulnerability. Flour mills have their own facilities and use purpose-built machinery that they believe has low vulnerability. Bulk grain facilities for rice and soybeans are also seen to have low vulnerability. Most procedures are manual or performed by non-date-dependent machinery. Product delivery and distribution are also considered to have low vulnerability. Most deliveries are handled directly by the buyer/seller and information is collected by ledger and exchanged by phone and fax.

Table 1

Indonesia - Transport Modes For Distribution of Agricultural Processed and High-Value Products

Mode/Facility	Re	Vu	Ma	Remarks
Ocean Carriers	3	H	M	N/A
Ports	3	M	M	Customs is a major concern of the government.
Motor Carriers	2	M	H	Difficult to obtain information from the government's situation regarding fuel supply/

Table 2

Indonesia - Transport Modes for Distribution of Bulk Grain Products

Mode/Facility	Re	Vu	Ma	Remarks
Ports	3	M	H	EDI system is compliant, other systems , low vulnerability.
Mills	4	M	H	Relatively well prepared.
Grain Transport (internal)	1	L	H	Fuel supply big question.

Re: Readiness Level - 1= Beginning Awareness; 2 = Awareness; 3 = Assessment; 4 = Remediation; 5 = Testing; 6 = Implementation.

Vu: Vulnerability - L = low; M = medium, or H = high vulnerability of mode on date-dependent computer systems/chips.

Ma: Magnitude - L = low, M = medium, or H = high importance of mode to delivery of a particular food group.

Major Food Aid Recipients

Bangladesh

Due to their limited reliance on computers, Bangladeshi port authorities do not anticipate a significant disruption of operations resulting from the transition to Y2K. At Chittagong Port (through which 99 percent of U.S. agricultural exports to Bangladesh enter the country), authorities report that all of their software programs utilize four-digit year dates, and that new, Y2K-compatible hardware was to be installed in July.

The Port of Chittagong does not utilize a computerized navigational system. Bulk and container terminal facilities employ older machines which, reportedly, do not contain implanted chips. By all accounts, the import/export infrastructure and distribution systems would not be affected by any computer disruptions arising from Y2K. Customs records are collected and recorded manually and inspection agencies do not employ computers.

Table 1

Bangladesh - Transport Modes Concerned With Distribution of Agricultural Processed and High-Value Products

Mode/Facility	Re	Vu	Ma	Remarks
Ports	**0**	L	H	According to local reps of the major shipping lines, Y2K measures are being addressed by their head offices.
Mills	4	L	H	--
Grain Transport	1	L	L	Virtually no trucks contain imbedded chips.

Re: Readiness Level - 1= Beginning Awareness; 2 = Awareness; 3 = Assessment; 4 = Remediation; 5 = Testing; 6 = Implementation.

Vu: Vulnerability - L = low; M = medium, or H = high vulnerability of mode on date-dependent computer systems/chips.

Ma: Magnitude - L = low, M = medium, or H = high importance of mode to delivery of a particular food group.

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Table 2
Bangladesh - Transport Modes for Distribution of Bulk Grain Products

Mode/Facility	Re	Vu	Ma	Remarks
Ports	4	L	H	--
Mills	2	L	M	Most mills are more than 25 years old and do not rely on computers. Only 25 percent of wheat consumed is milled by commercial flour millers.
Grain Transport	1	L	H	Virtually no trucks contain imbedded chips.

Re: Readiness Level -   1= Beginning Awareness; 2 = Awareness; 3 = Assessment; 4 = Remediation; 5 = Testing; 6 = Implementation.

Vu: Vulnerability   -   L = low; M = medium, or H = high vulnerability of mode on date-dependent computer systems/chips.

Ma: Magnitude   -   L = low, M = medium, or H = high importance of mode to delivery of a particular food group.