## Panama Canal Expansion: Agricultural Benefits to a Limited Few? \*\*

Mechel S. Paggi & Fumiko Yamazaki \*

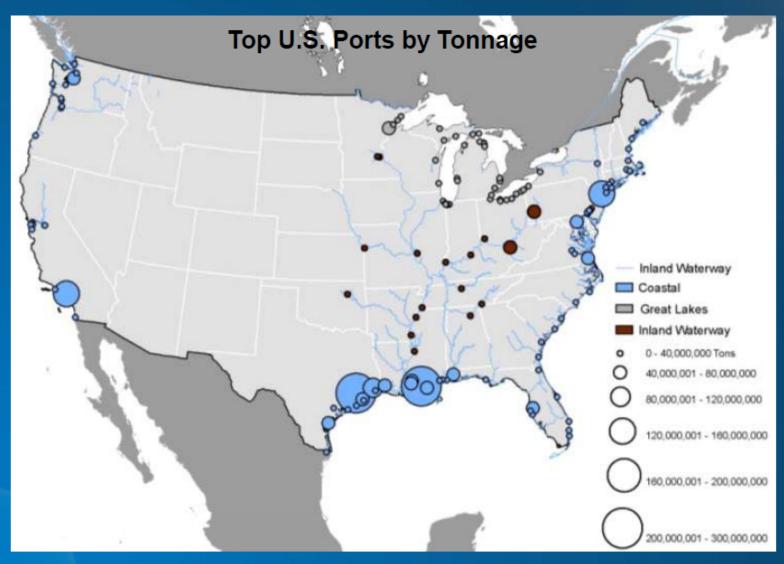
Organized Symposium: Impacts of the Panama Canal Expansion on U.S. and Southern Agricultural Trade

\*\* With a digression on general Issues in Ag Transportation

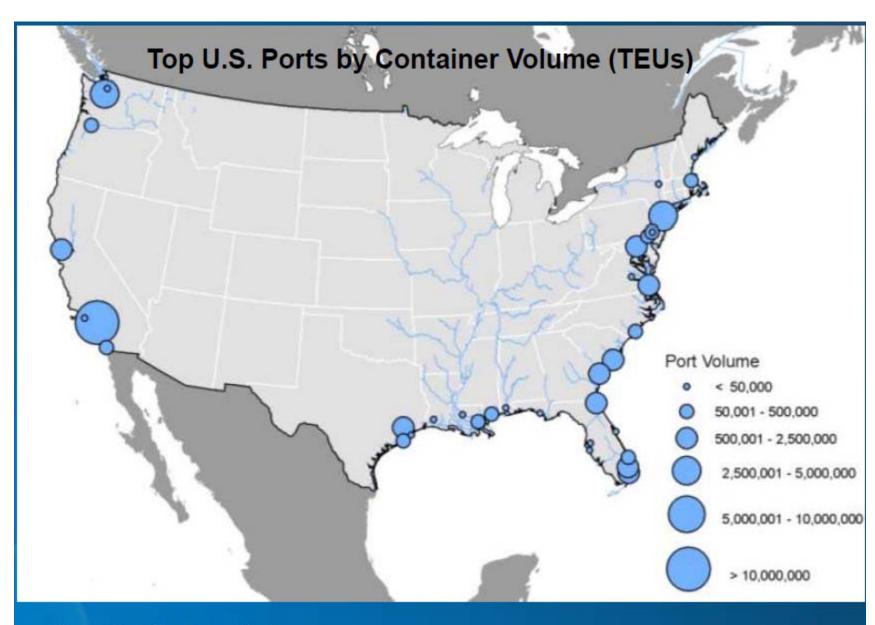
Southern Agricultural Economics Association Annual Meetings
Birmingham, Alabama
February 4, 2012

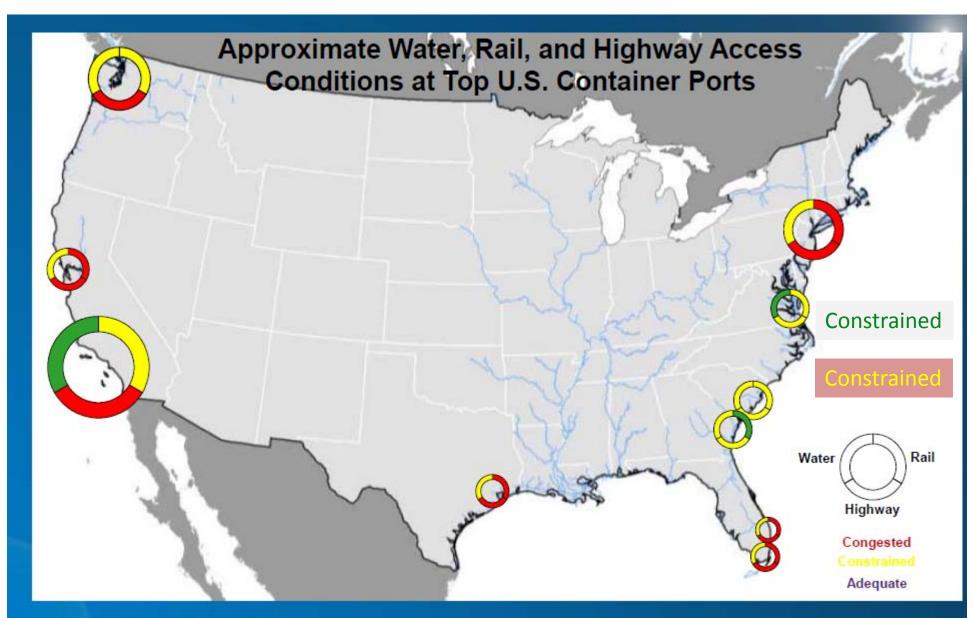
\*Director and Senior Research Economist, Center for Agricultural Business, California Agricultural Technology Institute, Jordan College Of Agricultural Sciences and Technology, California State University, Fresno, respectively.

# Growth at the largest tonnage ports is driven by petroleum imports, agricultural exports, and movement of non-metallic minerals –









Source: Cambridge Systematics, Inc.



#### The Current Situation

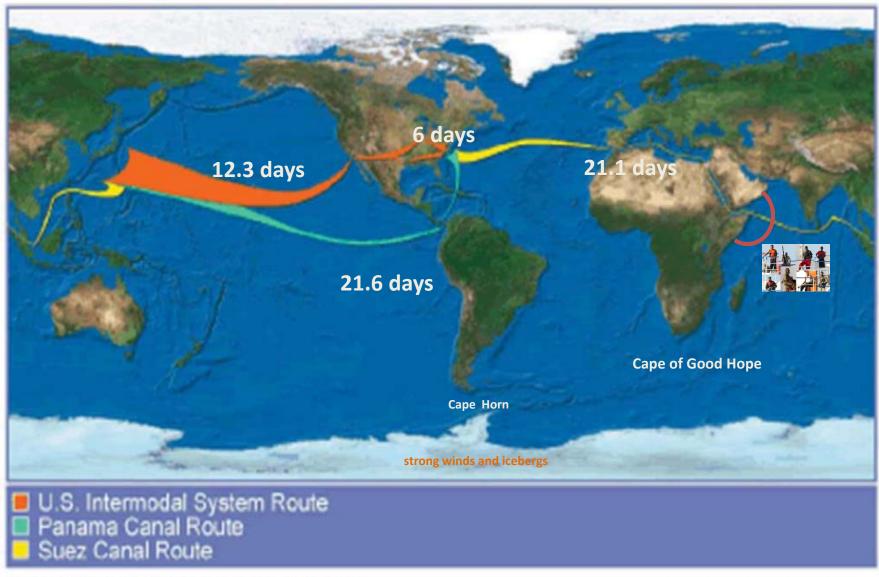
The Panama Canal expansion is expected to affect global transportation trade routes. The Panama Canal's main competitors for shipments from Asia to the U.S. East Coast are the U.S. Intermodal System and the Suez Canal.

The <u>Panama Canal</u> is an efficient route, but is reaching its maximum capacity, current navigation time of 21.6 days. However, this problem is expected to be resolved by 2014 when the Panama Canal Expansion Project is completed.

The <u>Suez Canal</u> route, especially, competes with the Panama Canal in the South and Southeast Asia–U.S. East Coast route due to its shorter navigation time of 21.1 days and its capacity to handle Post-Panamax vessels.

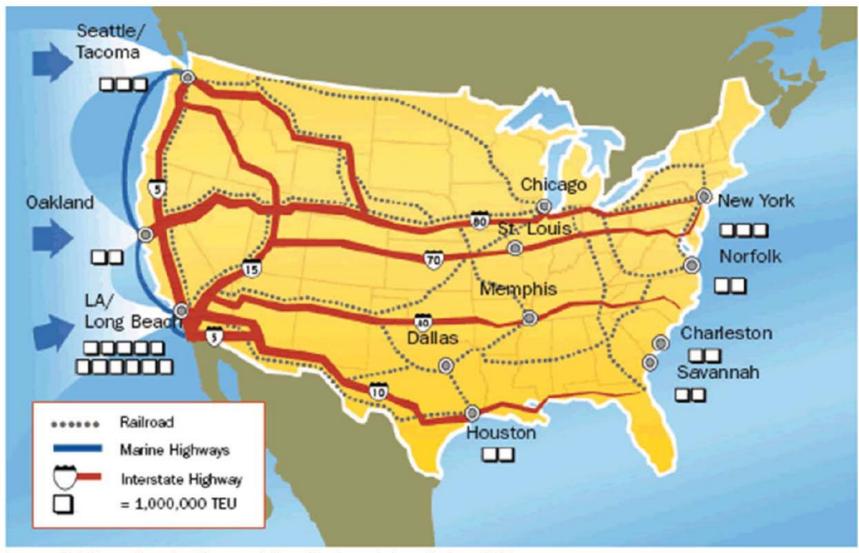
The <u>U.S. Intermodal System</u> has the shortest ocean navigation time (Asia to U.S. West Coast) of 12.3 days. Transit time from the West Coast to the East Coast is another 6 days, for a total transit time from Asia to the East Coast of about 18.3 days.

Figure 1: Main competitors of the Panama Canal route



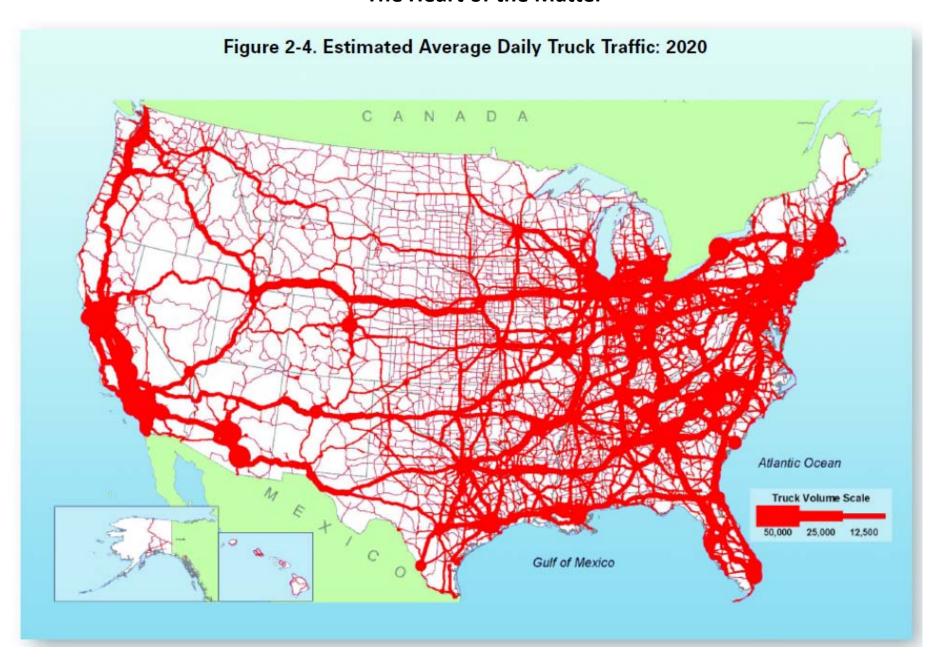
Source: Courtesy of The Panama Canal Authority

Figure 2: U.S. West Coast gateways and corridors

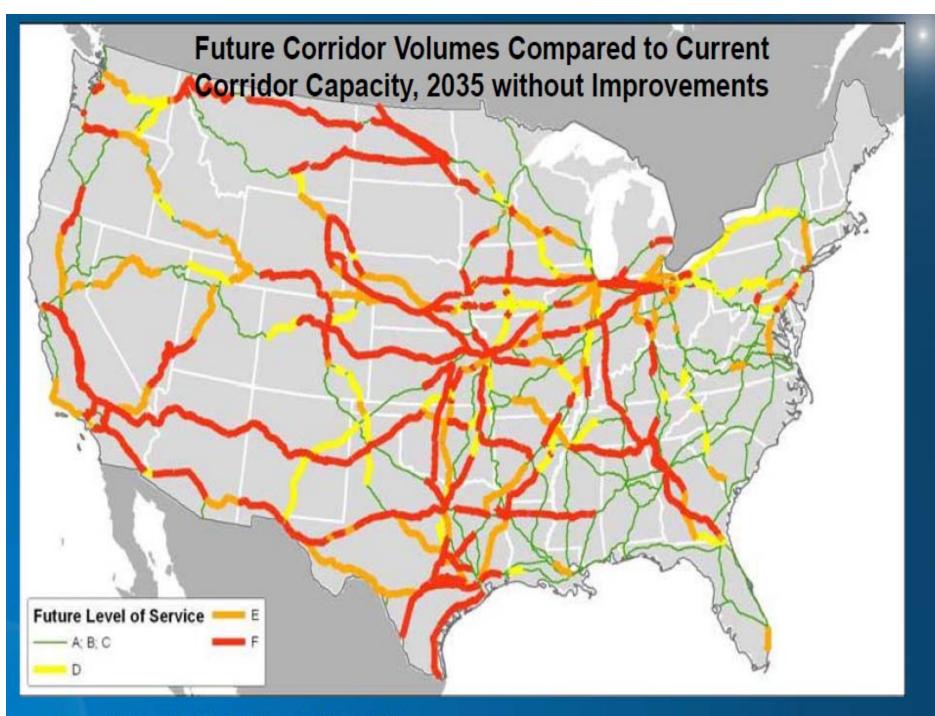


Source: U.S. Department of Transportation, Maritime Administration, 2009

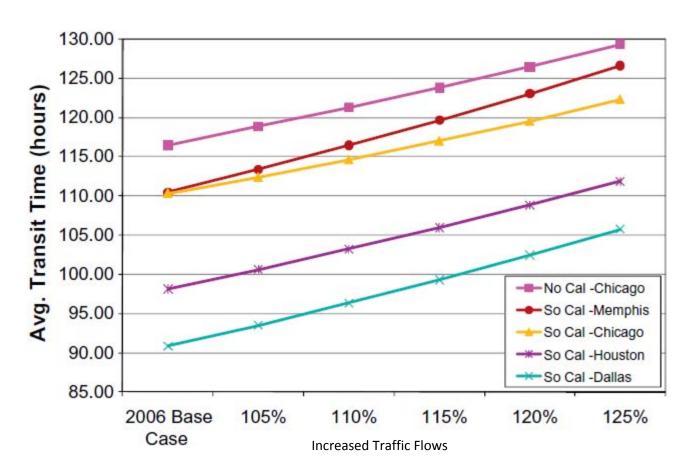
#### The Heart of the Matter







### Predicted Increase in Peak Period Transit Times Intermodal Trains



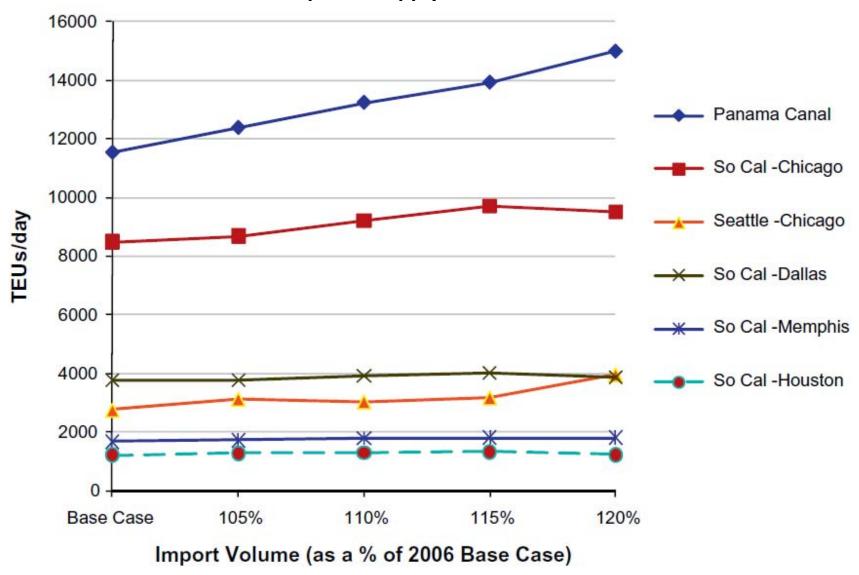
Estimating flow times for containerized imports from Asia to the United States through the Western rail network

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#### Proportionate increases in shipment volumes; allocated to minimize Importer supply chain costs



Jula, P., Leachman, R.C., 2011a. Long- and short-run supply-chain optimization models for the allocation and congestion management of containerized imports from Asia to the United States. Transportation Research Part E 47 (5), 593–608.

Jula, P., Leachman, R.C., 2011b. A supply-chain optimization model of the allocation of containerized imports from Asia to the United States. Transportation Research Part E 47 (5), 609–622.

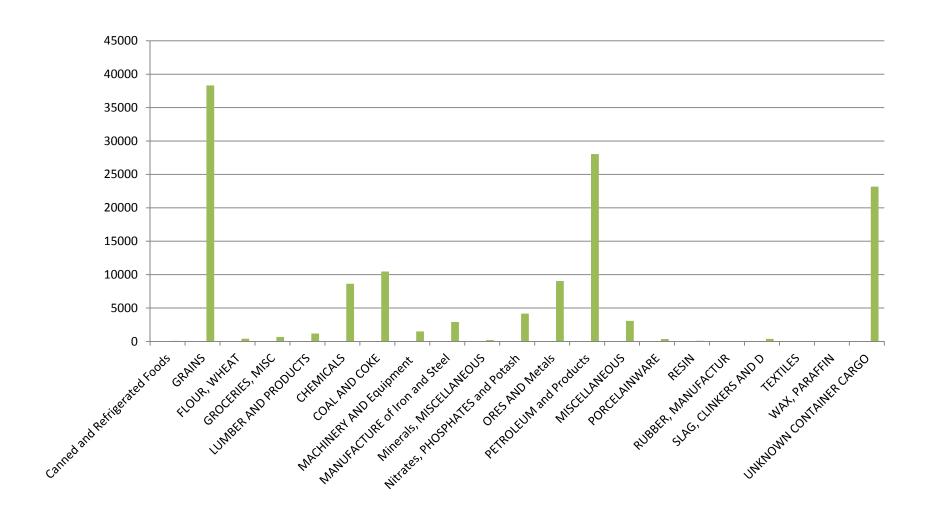
The Panama Canal Authority classifies its market into eight segments (ACP 2006):

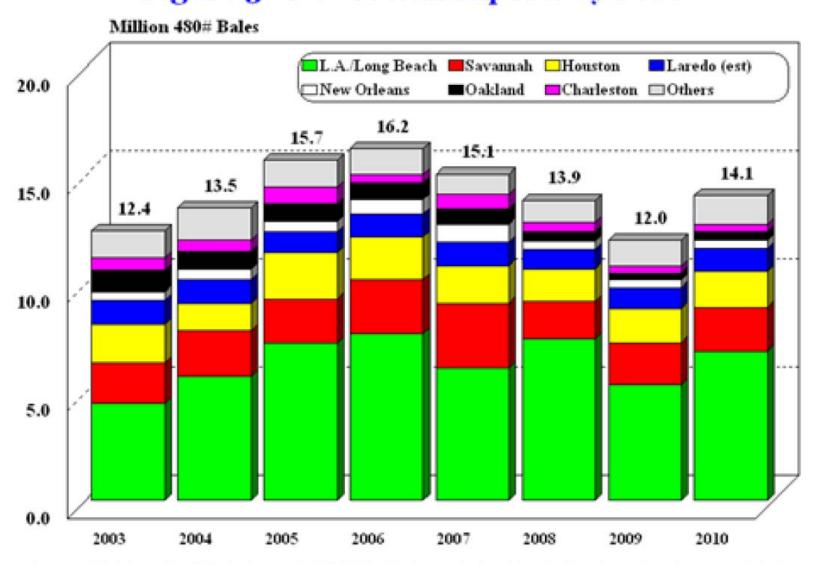
- Containerships
- > Dry bulk vessels that carry grains, ores, or their derivatives
- Vehicle carriers
- ➤ Liquid bulk vessels, which transport chemical products, gases, and oil derivatives
- > Reefers or refrigerated transport
- Cruise ships
- General cargo vessels
- Miscellaneous vessels such as fishing boats, navy and research vessels, dredges, and barges

## Principal Commodities Shipped through the Panama Canal Fiscal Year 2011 (Thousands of Long Tons\*)

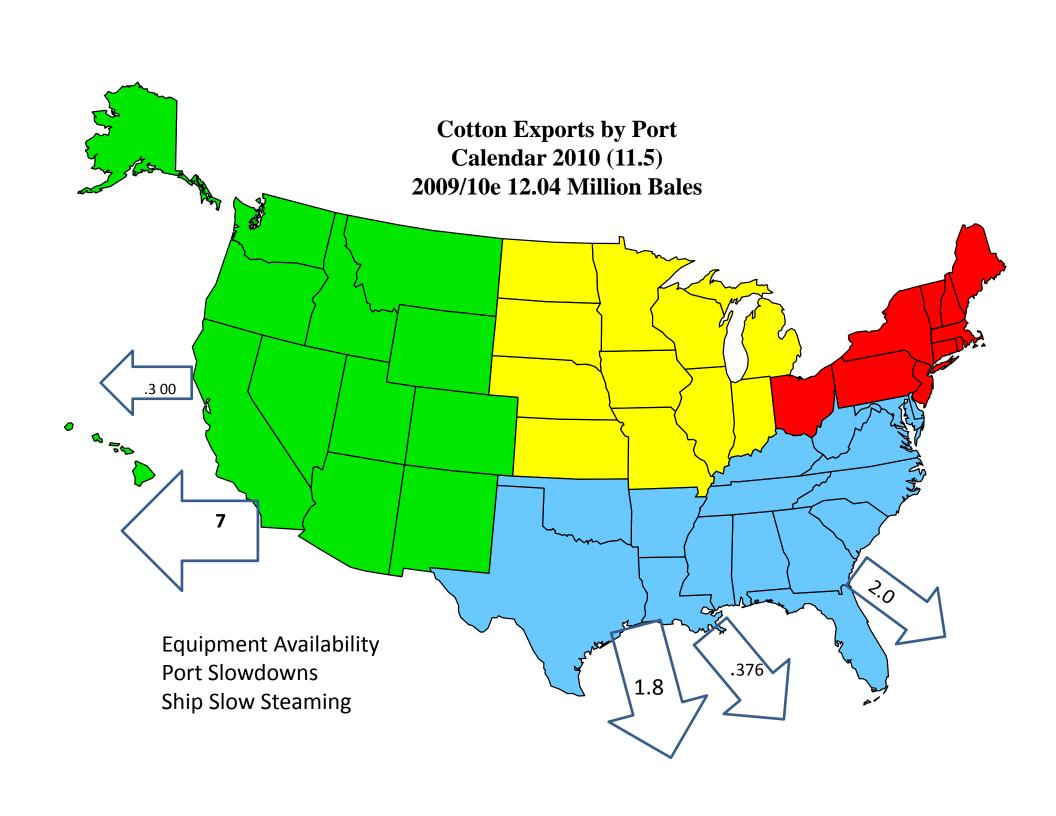
•
Commodities
79
38,317
397
661
1,185
8,627
10,463
1,495
2,902
198
4,157
9,035
28,037
3,068
356
95
11
374
5
6
23,163
132631

## Principal Commodities Shipped through the Panama Canal Fiscal Year 2011 (Thousands of Long Tons\*)





 $Source: \ Global\ Agricultural\ Trade\ System\ (GATS), USDA\ Foreign\ Agricultural\ Service, http://www.fas.usda.gov/gats/default.aspx$ 



#### GROUPS WILL COLLABORATE TO PROMOTE BENEFITS OF CANAL EXPANSION

On May 10, 2011, in Washington, D.C., the Panama Canal Authority (ACP) Administrator/CEO Alberto Alemán Zubieta and Soy Transportation Coalition (STC) Chairman Ed Ulch signed a Memorandum of Understanding (MOU) to foster the growth of global commerce.

During a luncheon sponsored by the STC in Washington, D.C., both parties affirmed their commitment to mutual growth and cooperation. The objectives of this agreement are to undertake joint marketing efforts, data exchange to forecast future trade flows and market trends, and the sharing of information related to modernization and improvement projects.

The Soy Transportation Coalition (STC), comprised of nine state soybean boards, advocate for the improvement of transportation means for shippers of U.S. soybeans and soybean products. It is an organization dedicated to the improvement of transportation means for the shippers of U.S. soybeans and soybean products and for the development of a higher degree of efficiency in such transportation. The nine participating state soybean boards are: the Illinois Soybean Association, the Indiana Soybean Alliance, the Iowa Soybean Association, the Kansas Soybean Commission, the Kentucky Soybean Board, the Nebraska Soybean Board, the North Dakota Soybean Council, the Ohio Soybean Council, and the South Dakota Soybean Research and Promotion Council.

U.S. grain exports are a major commodity trade for the Panama Canal. These cargoes are key to the strong performance of dry bulk transits through the waterway. According to the STC, in 2010 soybeans were the most transited U.S. agricultural commodity through the Panama Canal.

"We appreciate the Soy Transportation Coalition reaching out to us for this Memorandum of Understanding. We welcome partnerships and engagements from organizations and industries that benefit from the services of the Panama Canal," said Mr. Alemán Zubieta.

During fiscal year 2010, grain movements totaled 40.4 million long tons, primarily from the U.S. Gulf of Mexico to Asia. Soybean cargoes reached a record 15.5 million long tons (560 million bushels), which amounted to 38 percent of total grain cargoes.

"We must prioritize investments to U.S. infrastructure so our agricultural exports can benefit from the expansion of the Panama Canal," said Mr. Ulch.

Once completed in 2014, the expanded Panama Canal will have a new lane of traffic, doubling capacity and allowing for the transit of longer and wider ships, also known as post-Panamax.

# U.S. Fruit and Vegetable Shipments Calendar Year, 2010 (AMOUNTS ARE SHOWN IN UNITS OF 100,000 LBS)

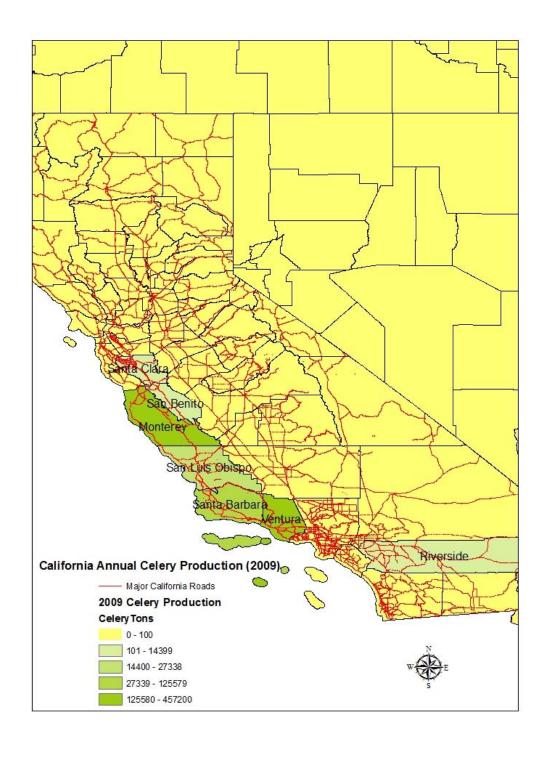
TRUCK	552,551
PIGGYBACK	9,606
RAIL	19,811
AIR	<b>49</b> a
BOAT	386b

- a. Cherries from Oregon
- b. Mangos 8, Tomatoes 378 from Puerto Rico

Source: USDA, AMS, FVAS4-Calendar 2010

Refrigerated railcars; Piggyback, trailer-on flat car; container-on-flat car

Domestic air; domestic boat from U.S. Possessions





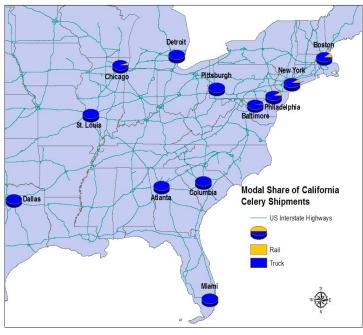
#### Celery Tons

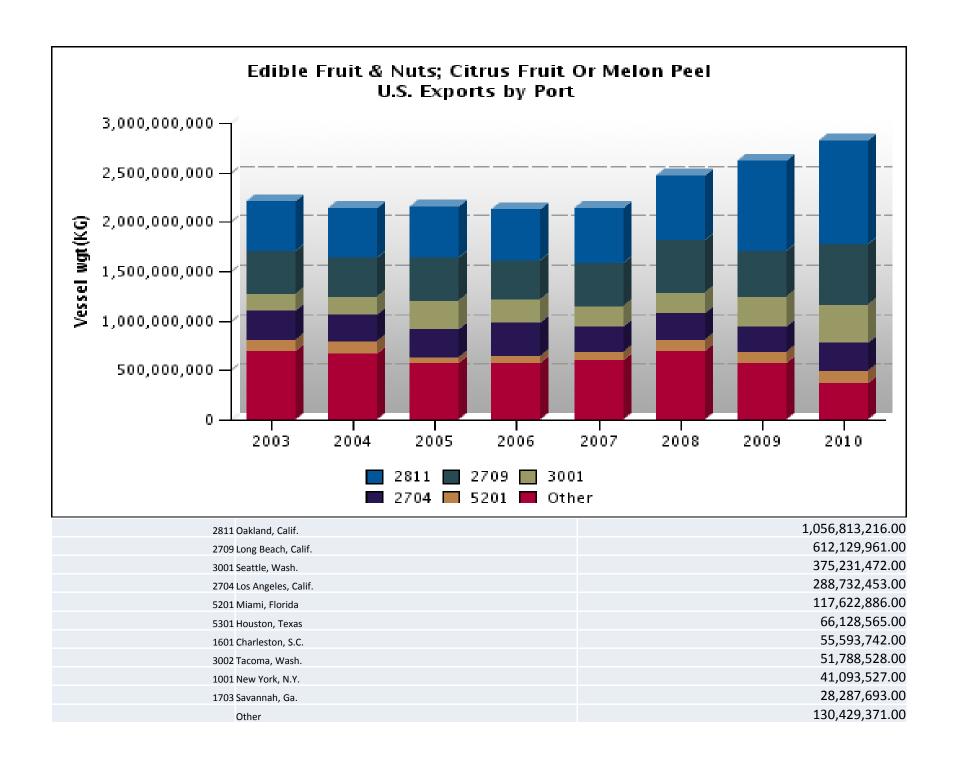
- 94
- 95 1514
- 1515 2345
- 2346 3526
- 3527 4712

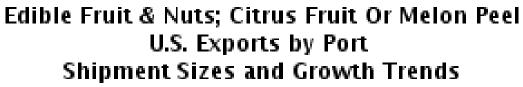


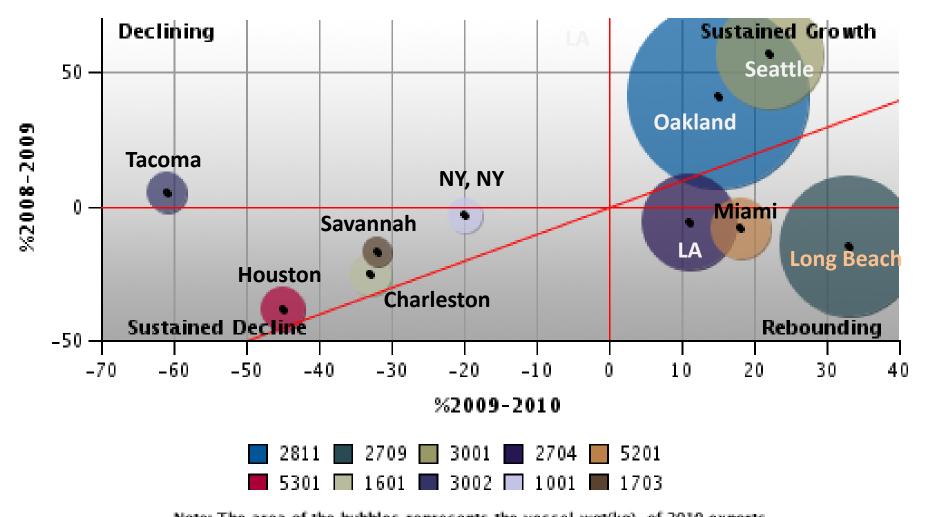
## Modal Share Celery



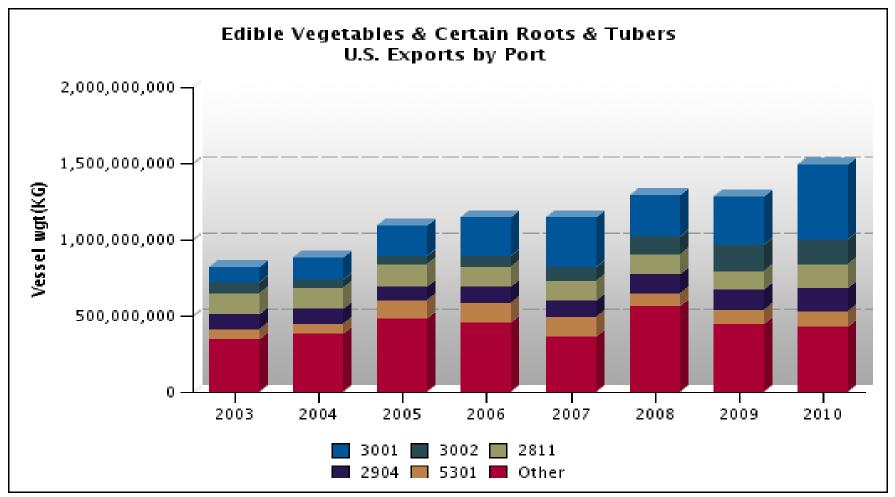






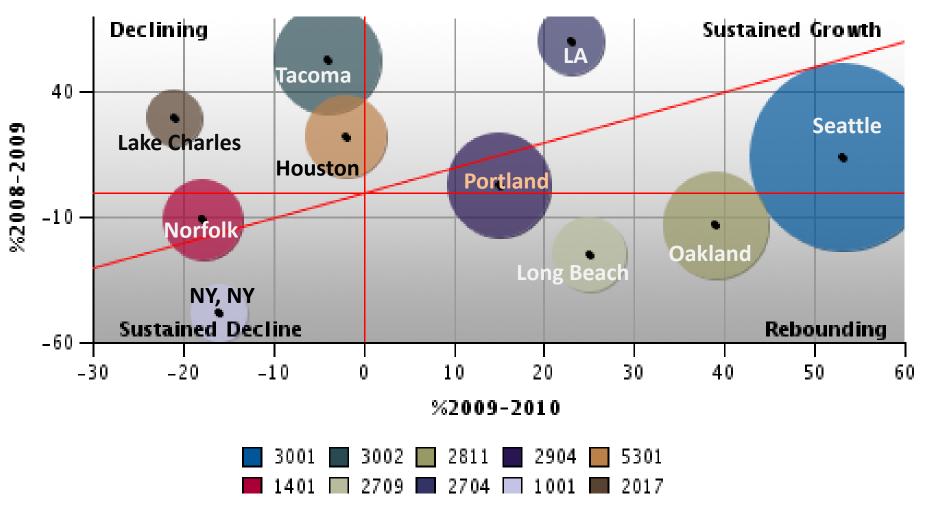


Note: The area of the bubbles represents the vessel wgt(kg) of 2010 exports.



TOTAL ALL PORTS	1,491,354,772.00
3001 Seattle, Wash.	487,431,686.00
3002 Tacoma, Wash.	164,409,631.00
2811 Oakland, Calif.	160,658,653.00
2904 Portland, Oregon	155,439,235.00
5301 Houston, Texas	95,128,544.00
1401 Norfolk, Va.	91,421,003.00
2709 Long Beach, Calif.	80,092,924.00
2704 Los Angeles, Calif.	64,076,039.00
1001 New York, N.Y.	48,286,062.00
2017 Lake Charles, La.	46,497,271.00

# Edible Vegetables & Certain Roots & Tubers U.S. Exports by Port Shipment Sizes and Growth Trends



Note: The area of the bubbles represents the vessel wgt(kg) of 2010 exports.

U.S. Port: All Ports

Commodity: Edible Fruit & Nuts; Citrus Fruit Or Melon Peel

Partner Country: Total all Countries

Rows selected: TOP 10

Trade flow: Imports

HS Code: 08 Order: Desc

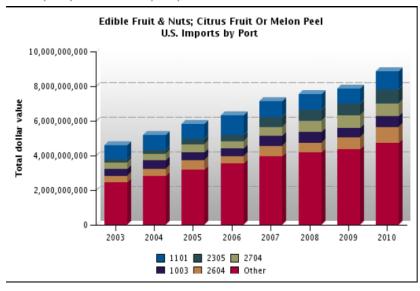
User Name: mpaggi

Unit: Total dollar value Sorted by: 2011 Nov Ytd

Runtime: 16:38:22 PM, Tue Jan 31 2012 EST

Rank	Code	Description	ANNUAL 2008	ANNUAL 2009	ANNUAL 2010
		TOTAL ALL PORTS	7,530,115,256.	7,855,886,703.	8,874,907,930.
1	1101	Philadelphia, Pa.	914,409,859.	861,955,013.	1,050,830,188.
2	2305	Hildago, Texas	618,369,697.	687,360,543.	813,945,637.
3	2704	Los Angeles, Calif.	626,627,045.	708,914,672.	725,128,280.
4	1003	Newark, N.J.	624,843,986.	573,849,749.	669,287,774.
5	2604	Nogales, Ariz.	584,581,275.	676,270,457.	895,558,431.
6	1103	Wilmington, Del.	589,760,120.	611,660,104.	657,937,640.
7	2304	Laredo, Texas	286,427,100.	329,480,127.	311,955,800.
8	1401	Norfolk, ∀a.	253,520,446.	215,862,723.	267,872,529.
9	2713	Port Hueneme, Calif.	189,713,432.	258,923,588.	255,447,175.
10	2506	Otay Mesa Station	212,327,080.	245,252,663.	282,355,270.

Panama Canal Inbound 08 Code Cargo: Chile Grapes; Ecuador Bananas



U.S. Port: All Ports
Commodity: Edible Vegetables & Certain Roots & Tubers

Partner Country: Total all Countries

Rows selected: TOP 10

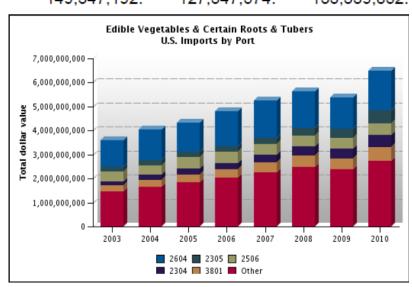
Trade flow: Imports
HS Code: 07

Order: Desc User Name: mpaggi Unit: Total dollar value Sorted by: 2011 Nov Ytd

Runtime: 16:54:26 PM, Tue Jan 31 2012 EST

Rank	Code Description	ANNUAL 2008	ANNUAL 2009	ANNUAL 2010
	TOTAL ALL PORTS	5,632,897,265.	5,391,310,959.	6,485,797,441.
1	2604 Nogales, Ariz.	1,540,717,332.	1,314,103,887.	1,637,334,823.
2	2305 Hildago, Texas	316,232,017.	378,527,781.	551,357,448.
3	2506 Otay Mesa Station	440,219,889.	438,274,623.	491,522,402.
4	2304 Laredo, Texas	377,751,303.	425,809,452.	484,039,971.
5	3801 Detroit, Michigan Canada, tomatoes,; Mexico, Mixed vegs.	482,315,394.	456,060,760.	588,615,718.
6	2507 Calexico-East, Ca.	311,015,077.	248,342,255.	322,161,412.
7	1003_ Newark, N.J.	194,130,523.	177,767,537.	177,571,516.
8	0901_ Buffalo-Niagara Falls, N.Y.	150,139,038.	141,970,439.	158,180,524.
9	5206 Miami Int. Airport, Fla. Peru, lettuce?	115,744,475.	142,956,780.	178,392,986.
10	3004 Blaine, Wash.	149,347,192.	127,347,574.	133,339,852.

Panama Canal Inbound 07 Code Cargo: Frozen Vegetables, China (N,N.J.)

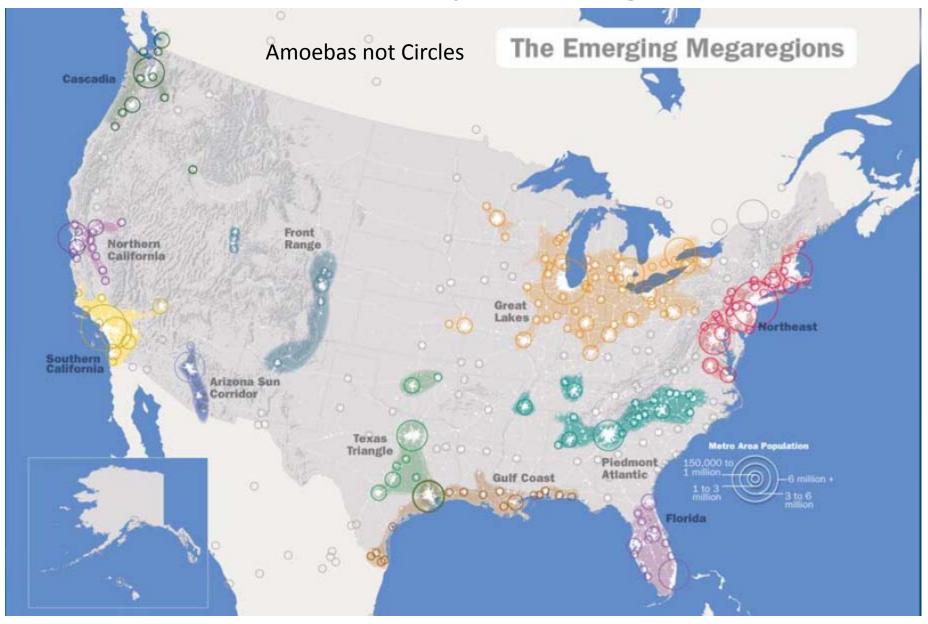


# Innovative Solutions for Niche Market Segments E.g., Railex Services

- Hold product up to 5 days at proper temperature at both the origin and destination Railex facility. Freight forwarding allows product to be positioned and staged for one day transit
- Consolidate PO's in the East and ship direct
- 6 train departures per week
- 5 day rail transit
- Only 1,100 reefer cars in fleet @ 4 trucks/car



### On the Import Side Market Areas for Imported Freight



### Major U.S. Container Ports, Post-Panamax Specs.

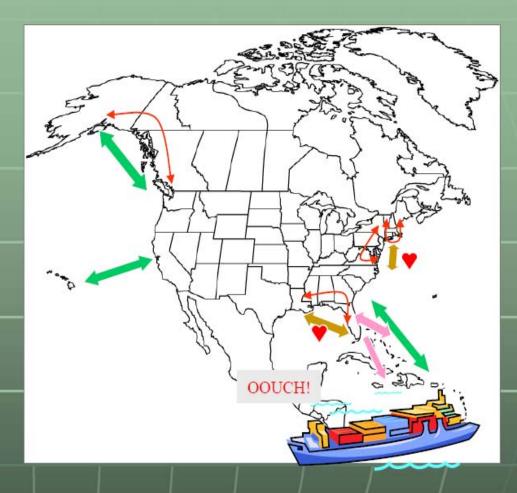
Top 10 U.S. Container Ports, Post-Panamax Cranes and Channel Depths							
	Trade (000 MTs)		Post-Panamax	Channel Depth			
Port	2004	2009	% Ch.	Cranes	> 45 feet		
LA/LB	53.6	57.5	7.4	77	у		
New York	23.6	27.8	17.9	41	n		
Houston	14.6	16.3	11.5	4	n		
Savannah	11.6	15.7	35.9	23	n		
Seattle	14.5	15.4	5.8	40	у		
San Francisco	9.6	11.6	21.4	14	у		
Virginia Ports	10.1	10.5	4.4	14	у		
Charleston	10.8	7.7	-29.0	6	n		
Miami	8.5	7.6	-11.0	7	n		
New Orleans	5.0	5.2	3.9	4	n		
Total, Top 10	161.8	175.3	8.3				
Total	187.6	200.7	7.0				
Sources: Trade – U.S. Bureau of Census; Facilities – Lloyds Maritime Intelligence Unit.							

Sources: Trade – U.S. Bureau of Census; Facilities – Lloyds Maritine intelligence Unit.

- Top ten ports have above average trade growth; in 2009 they accounted for 87 percent of total trade.
- Bad news! Only one East Coast Port has post-panamax channel depths.
- Good news! New York and Savannah are dredging.

### Feeders, U-boats and Love Boats?

U.S. Feeders, 2008				
	Mil. MT			
Trade	2003	2008	% Ch.	
Domestic Offshore	16.4	17.0	3.7	
Foreign Offshore	3.7	5.0	35.0	
Freeport	2.9	3.6	24.1	
Kingston	0.8	1.4	75.0	
Domestic Coastal	2.7	2.2	-18.5	
Trade	174.0	235.1	35.0	
1				



- Feeders? Additional time and transshipment costs (container lifts) are a hindrance.
- Foreign offshore feeders account for only about 2 percent of U.S. foreign trade.

# Post Panamax LOTTO ?

- Post-Panamax Fleet (5,000+ TEU) accounts for 40 percent of fleet capacity.
- PPF fleet draws an average of 46 feet of water.
- PPF is on average 29 percent faster than rest of the fleet.
- Post-panamax trend will funnel more trade to fewer ports.
- No trend toward feeders -- additional time and transshipment costs are a hindrance.
- So far, investment in post-panamax cranes and dredging appears on schedule to meet infrastructure demands of canal expansion.
- Dredge baby Dredge!
- ? Wins the Post-Panamax LOTTO.

The super post Panamax vessels, at 176' wide, will not be able to pass through the improved Panama canal. They are limited to ocean-only routes between ports. Ports around the world are upgrading to super post Panamax cranes to the tune of \$5 million each. To fulfill the Port's imminent destiny, the Savannah River must be dredged to maintain a 48' depth from current 42 feet; approval has taken 12 yrs. and ticking. Super Post Panamax: 176'-Post Panamax: 136'-Panamax: 106'-

### Summary

- The experts and related literature all seem to agree on at least one point: transit times through the Canal should be improved after the expansion, with significant benefits to grain exporters, including reduced losses, faster delivery, and better opportunities for identity preserved products.
- Groups like those in the Mid-America Freight Coalition (MAFC) region—Illinois, Indiana, Iowa, Kansas, Kentucky, Michigan, Minnesota, Missouri, Ohio, and Wisconsin— stand to benefit
- Other commodities like Cotton poised for improved shipment options
- The Panama Canal Expansion will have Benefits, However, the freight transport system in the U.S. is in for severe challenges in the years to come, across all modes, for all commodities
- Move to Super-Post-Panamax Vessels may further free up bulk cargo movement capacity through the Canal