Agricultural Trade Flows through Texas Ports: Recent Trends and Outlook

Texas Roundup
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Outline

• Importance of Agricultural and Food Trade
• Texas Role in Ag and Food Trade
• The Case of Fresh Fruit & Vegetable Imports from Mexico
• The Case of Cotton Exports and the Panama Canal
• The Case of Meat and Cattle Trade with Mexico
• Summary and Conclusions
U.S. Agricultural and Food Trade, 1990-2015

2015:
U.S. Ag Exports: $133.0 Billion
U.S. Ag Imports: $113.5 Billion

U.S. Export Share of Production

Source: ERS/USDA, U.S. Agricultural Trade Data
U.S. Employment Attributable to Agricultural Exports, 2014

- Other Manuf 322,000
- Food Proc 72,000
- On-Farm 324,000
- Serv/Trade/Trans 413,000

Total Jobs: 1,132,000

Source: ERS/USDA, Effects of Trade on the U.S. Economy
U.S. Food Import Share of Consumption

Percent of Consumption Imported

60%
50%
40%
30%
20%
10%
0%


Note: Nearly all Tropical Products and about 95% of Fish/Seafood Products Consumed in the U.S. are Imported.

Source: ERS/USDA, U.S. Agricultural Trade Data
U.S. Agricultural and Food Trade through Texas Ports, 1990-2015

2015:
U.S. Ag Exports: $18.3 Billion
U.S. Ag Imports: $17.8 Billion

U.S. Agricultural and Food Exports through Texas by Customs District

U.S. Agricultural and Food Imports through Texas by Customs District

U.S. Grain and Soybean Exports through Texas by Customs District

U.S. Wheat Exports through Texas by Port

Source: SAGARPA and WISERTrade
U.S. Corn Exports through Texas by Port

Source: SAGARPA and WISERTrade
U.S. Sorghum Exports through Texas by Port

<table>
<thead>
<tr>
<th>Year</th>
<th>Million Metric Tons</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>1.5</td>
</tr>
<tr>
<td>2014</td>
<td>5.8</td>
</tr>
<tr>
<td>2015</td>
<td>7.1</td>
</tr>
</tbody>
</table>

Source: SAGARPA and WISERTrade
U.S. Rice Exports through Texas by Port

Source: SAGARPA and WISE R Trade

http://cnas.tamu.edu/
U.S. Soybean Exports through Texas by Port

Source: SAGARPA and WISE RTrade
U.S. Fruits/Nut Imports through Texas by Seaport

**Mostly Bananas, Pineapples and Melons**

- **2013**: 897.7 Thousand Metric Tons
- **2014**: 928.0 Thousand Metric Tons
- **2015**: 955.9 Thousand Metric Tons

Source: WISE RTrade
Other Important Exports and Imports through Texas Ports

• Houston: Fats/Oils, Dry Beans, Peanut Exports; Beverages, Sweeteners, Gums/Resins, Coffee Imports

• Houston: Major Markets – China, Africa, Mexico, Central and South America, Turkey

• Houston/Galveston/Freeport: Major Sources – Central America

• Cotton – More Later

• Meats and Cattle – More Later

• Fresh Fruit and Vegetables from Mexico – More Now
U.S. Fruits and Vegetable Trade

  • Value of domestic production: $36.5 billion
  • Value of fresh and frozen exports: $8.5 billion
  • Value of fresh and frozen imports: $20.1 billion

– What Follows is a Summary of Work Done for Texas International Produce Association
Sources of Imported Fresh and Frozen Fruits to the U.S., 2015

Imports in Million Dollars

- **Chile**: $1,790
- **Mexico**: $4,692
- **Guatemala**: $1,066
- **Costa Rica**: $890
- **Peru**: $538
- **Ecuador**: $481
- **Canada**: $423
- **ROW**: $1,420

**Total Imports**: $11.3 Billion

Sources of Imported Fresh and Frozen Vegetables to the U.S., 2015

Total Imports: $8.8 Billion

- Mexico: $5,296
- Canada: $2,058
- Peru: $375
- China: $234
- Guatemala: $175
- ROW: $634

Imports in Million Dollars

U.S. Imports of Fresh Produce from Mexico by Truck, 2007-2023F, Baseline

1,000 40,000 Lb. Truckloads

Source: Agricultural Marketing Service, USDA and Department of Agricultural Economics, Texas A&M University System 2016-2023 Forecast based on 2007-2015 Model
## U.S. Imports of Fresh Produce from Mexico by Truck, Main Ports of Entry, 2015

<table>
<thead>
<tr>
<th>Port of Entry</th>
<th>40,000# Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nogales, AZ</td>
<td>141,119</td>
</tr>
<tr>
<td>Pharr, TX</td>
<td>131,850</td>
</tr>
<tr>
<td>Otay Mesa, CA</td>
<td>48,628</td>
</tr>
<tr>
<td>Laredo, TX</td>
<td>46,253</td>
</tr>
<tr>
<td>Progreso, TX</td>
<td>16,759</td>
</tr>
<tr>
<td>Rio Grande City, TX</td>
<td>11,633</td>
</tr>
<tr>
<td>All Other Ports</td>
<td>35,131</td>
</tr>
</tbody>
</table>

Source: AMS/USDA
Addressing Border Issues
Previously Cited by Industry

- Employee breaks and lunches halt inspections
- Shutting down inspections early
- Hours of operation too short
- Not enough inspectors (*More have been added*)
- Allow inspectors the authority to identify pests which are easily identifiable (*More are getting*)
- Not enough personnel with cargo release authority (*More are getting this authority*)
- Need improved management of resources
- Inefficient process for placement of verification seals
- The hours of operation for both FDA and CBP differ (*APHIS also has different hours*)
- Lack of education
- Need to send pests to off-site APHIS facilities (*Entomologist now located on-site at Pharr*)

(Report for TDA, August 2014)
Major Highway Network in Mexico

Source: Government of Mexico
U.S. Imports of Fresh Produce from Mexico by Truck, 2007-2023F, w/Industry Input

## Economic Impacts of U.S. F&V Imports from Mexico

Summary of Economic Activity from U.S. Produce Imports from Mexico over Land Borders, 2015 and 2023 Forecast with Industry Input

<table>
<thead>
<tr>
<th></th>
<th>TX/NM/AZ/CA 2015</th>
<th>2023F</th>
<th>Texas 2015</th>
<th>2023F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Truckloads</td>
<td>431,373</td>
<td>656,303</td>
<td>209,817</td>
<td>357,881</td>
</tr>
<tr>
<td>Direct Economic Output</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Warehousing</td>
<td>$168.2</td>
<td>$255.7</td>
<td>$81.8</td>
<td>$139.9</td>
</tr>
<tr>
<td>Truck Transportation</td>
<td>$129.4</td>
<td>$196.7</td>
<td>$62.9</td>
<td>$107.6</td>
</tr>
<tr>
<td>Sorting, Grading and Packing</td>
<td>$82.2</td>
<td>$125.0</td>
<td>$46.9</td>
<td>$80.2</td>
</tr>
<tr>
<td>Customs Brokering</td>
<td>$64.7</td>
<td>$98.4</td>
<td>$31.5</td>
<td>$53.8</td>
</tr>
<tr>
<td>Miscellaneous Border Services</td>
<td>$35.6</td>
<td>$54.1</td>
<td>$17.3</td>
<td>$29.6</td>
</tr>
<tr>
<td>Total Direct Economic Output</td>
<td>$480.2</td>
<td>$729.8</td>
<td>$240.4</td>
<td>$411.2</td>
</tr>
<tr>
<td>Total Supporting Economic Output</td>
<td>$535.7</td>
<td>$814.4</td>
<td>$236.3</td>
<td>$404.0</td>
</tr>
<tr>
<td>Total Economic Output</td>
<td>$1,015.9</td>
<td>$1,544.2</td>
<td>$476.7</td>
<td>$815.2</td>
</tr>
<tr>
<td>Total Jobs Supporting Produce Imports</td>
<td>8,485</td>
<td>12,897</td>
<td>4,510</td>
<td>7,712</td>
</tr>
</tbody>
</table>
F&V Conclusions

• U.S becoming more dependent on Fruits and Vegetables

• Food safety will continue to be a big issue

• Increase produce trade with Mexico through Texas
  – Pharr could soon become #1 port-of-entry

• More infrastructure and personnel needed

• Cutting transportation time crucial to fruit and vegetable quality
In 2011, assessed impacts of the Panama Canal Expansion Project on U.S. Cotton Exports by Port for AMS/USDA. Results of Costa and Rosson Paper presented here.

Evaluate PCE Impacts on U.S. Cotton Export Flows, Export Levels, Prices & Revenues.

Found that PCE will shape future competitive position of U.S. Cotton Production & Exports.

Evaluate impacts on other exporting countries.

Spatial Equilibrium Model of the International Cotton Industry 2008/09 MY.
U.S. Cotton Exports by Destination

Million 480# Bales

U.S. Cotton Production by State, 2010

Total Production:
18.1 Million Bales

TX: 43.5%
CA: 4.7%
AZ: 3.4%
MS: 4.7%
NC: 5.3%
AR: 6.5%
GA: 12.4%
TN: 3.8%
MO: 3.8%
AL: 2.7%
Others (<2.5%): LA, OK, SC, FL, VA, NM, KS

Source: NASS/USDA
U.S. Cotton Exports by Port & Destination, 2010

6.9 Mil Bales
>95% Asia

375,000 Bales
91% Asia

Los Angeles/Long Beach

Oakland

New Orleans:
376,000 Bales
65% Turkey
29% L.Amer. excl. Mexico

2.0 Mil Bales
67% Asia
44% Turkey
42% Asia

1.7 Mil Bales
27% Turkey
65% Turkey
21% S. Amer.

1.1 Million Bales
100% Mexico
(Hidalgo: 295,800 Bales;
Brownsville: 68,100 Bales)

Source: WISERTrade

(91% Asia)

(44% Turkey)

(42% Asia)
Panama Canal Importance to U.S. Cotton Exports

➢ In 2010, 1.34 million bales from Norfolk, Charleston, and Savannah exported to East Asia via Panama Canal
  ➢ This represents ~10% of the total U.S. exports

➢ Panama Canal previously could not handle post-Panamax vessels (12,000 TEUs)

➢ U.S. cotton exports via the Panama Canal were via smaller Panamax vessels (<5,000 TEUs)
Panama Canal Expansion (PCE) & Costs

Economies of scale in maritime shipping

- 36% of the world containerized fleet is Post-Panamax vessels (up to 12,000 TEU) (2011)
- After PCE, shipping costs per container likely decline 40%

Cost structure

- Panamax vessel operational costs of $2,314/TEU (4,000 TEU)
- Post-Panamax vessel operational costs of $1,449/TEU (10,000 TEU)
Panama Canal Expansion

Transit time vs. PCE Cost Savings

• East Coast to China (Shanghai port) route via the Panama Canal (all-water) is 7-8 transit days longer than the Intermodal Option (rail to West Coast ports)

• Intermodal Option across U.S. is more efficient time-wise

• But, the all-water route from the East Coast is about $490/TEU cheaper than the Intermodal Option

• This cost differential corresponds to a savings of ~$70/TEU/day ($490/TEU/7 days)

• PCE will reduce maritime costs at least $210/TEU for the East Coast ports to China
Panama Canal Expansion

➢ Toll Charges
   • Recent toll increases captured 1/3 of the potential savings of the expansion or $70/TEU of $210/TEU

➢ In the end, PCE will reduce maritime costs for shipments from the Gulf & South Atlantic ports to China by $140/TEU
   • 28% reduction ($140/$490 = 28%)
Results

Most Likely Scenario (2): 28% Reduction in Ocean Freight rates Due to PCE

- Panama Canal expansion is expected to increase cotton exports via the Panama Canal
- U.S. Gulf and Atlantic ports should increase cotton exports
- Pacific Coast ports, however, would experience a reduction in cotton exports

*Note: Scenario 1 is 10% Reduction in Rates; Scenario 3 is Scenario 2 + 10% Reduction in LA/LB Rates*
## Results for 28% Reduction in Ocean Freight, Gulf & South Atlantic Ports

<table>
<thead>
<tr>
<th>Port</th>
<th>Base Model</th>
<th>Scenario 1</th>
<th>Change (%)</th>
<th>Scenario 2</th>
<th>Change (%)</th>
<th>Scenario 3</th>
<th>Change (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Savannah</td>
<td>2,236.7</td>
<td>3,907.5</td>
<td>74.7</td>
<td>4,450.9</td>
<td>99.0</td>
<td>3,903.3</td>
<td>74.5</td>
</tr>
<tr>
<td>Houston</td>
<td>1,551.8</td>
<td>2,046.2</td>
<td>31.8</td>
<td>2,434.5</td>
<td>56.9</td>
<td>1,795.6</td>
<td>15.7</td>
</tr>
<tr>
<td>New Orleans</td>
<td>514.7</td>
<td>724.2</td>
<td>40.7</td>
<td>1,197.8</td>
<td>132.7</td>
<td>1,144.7</td>
<td>122.4</td>
</tr>
<tr>
<td>Charleston</td>
<td>338.3</td>
<td>534.3</td>
<td>57.9</td>
<td>875.6</td>
<td>158.8</td>
<td>577.9</td>
<td>70.8</td>
</tr>
<tr>
<td>Norfolk</td>
<td>282.2</td>
<td>333.5</td>
<td>18.2</td>
<td>617.9</td>
<td>118.9</td>
<td>579.9</td>
<td>105.5</td>
</tr>
<tr>
<td>Gulfport</td>
<td>45.3</td>
<td>20.9</td>
<td>-54.9</td>
<td>20.5</td>
<td>-54.9</td>
<td>0.0</td>
<td>-100.0</td>
</tr>
<tr>
<td>Mobile</td>
<td>72.8</td>
<td>24.0</td>
<td>-67.0</td>
<td>0.0</td>
<td>-100.0</td>
<td>0.0</td>
<td>-100.0</td>
</tr>
<tr>
<td><strong>Total U.S. Gulf and Atlantic</strong></td>
<td><strong>5,041.8</strong></td>
<td><strong>7,590.6</strong></td>
<td><strong>50.5</strong></td>
<td><strong>9,597.2</strong></td>
<td><strong>90.3</strong></td>
<td><strong>8,001.4</strong></td>
<td><strong>58.7</strong></td>
</tr>
<tr>
<td>L.A.-Long Beach</td>
<td>6,163.3</td>
<td>3,697.2</td>
<td>-40.0</td>
<td>1,879.5</td>
<td>-69.5</td>
<td>3,827.7</td>
<td>-37.9</td>
</tr>
<tr>
<td>Oakland</td>
<td>343.8</td>
<td>343.6</td>
<td>-0.1</td>
<td>343.3</td>
<td>-0.1</td>
<td>45.4</td>
<td>-86.8</td>
</tr>
<tr>
<td><strong>Total West Coast</strong></td>
<td><strong>6,507.1</strong></td>
<td><strong>4,040.8</strong></td>
<td><strong>-37.9</strong></td>
<td><strong>2,222.9</strong></td>
<td><strong>-65.8</strong></td>
<td><strong>3,873.1</strong></td>
<td><strong>-40.4</strong></td>
</tr>
<tr>
<td>Laredo-El Paso</td>
<td>1,141.3</td>
<td>1,296.7</td>
<td>13.6</td>
<td>1,269.5</td>
<td>11.2</td>
<td>1,264.6</td>
<td>10.8</td>
</tr>
<tr>
<td>Hidalgo-Brownsville</td>
<td>340.6</td>
<td>176.6</td>
<td>-48.1</td>
<td>179.2</td>
<td>-47.4</td>
<td>179.6</td>
<td>-47.3</td>
</tr>
<tr>
<td><strong>Total U.S.-Mexico Border Ports</strong></td>
<td><strong>1,481.9</strong></td>
<td><strong>1,473.3</strong></td>
<td><strong>-0.6</strong></td>
<td><strong>1,448.7</strong></td>
<td><strong>-2.2</strong></td>
<td><strong>1,444.2</strong></td>
<td><strong>-2.5</strong></td>
</tr>
<tr>
<td><strong>Total U.S. Ports</strong></td>
<td><strong>13,030.8</strong></td>
<td><strong>13,104.7</strong></td>
<td><strong>0.6</strong></td>
<td><strong>13,268.8</strong></td>
<td><strong>1.8</strong></td>
<td><strong>13,318.7</strong></td>
<td><strong>2.2</strong></td>
</tr>
</tbody>
</table>
Panama Canal Expansion Will Play Major Role in Future of U.S. Cotton Exports

- Total U.S. cotton exports increase by 238,000 Bales, or 2%
- Gulf and S. Atlantic ports increase cotton exports by 4.6 Million Bales or 90%
- West Coast ports exports decline by 4.3 Million Bales or 66%
Similar Impacts for Other Ag Products?

- Probably, but to a Lesser Degree than Cotton
- Soybeans – Most Exports to Asia Shipped through LA, WA, and VA, Closer to Source
- But, CA Ports Account for 3.9% of (1.2 MMT) Soybean Shipments to Asia while Producing no Soybeans
  - Must come from considerable distance as only minimal amounts produced west of Great Plains
- Corn – Most Exports to Asia Shipped through LA and WA, Closer to Source
- But, CA Ports Account for 5.6% (680 TMT) of Corn Shipments to Asia while Producing Minimal Amounts
  - Likely comes from considerable distance as only minimal amounts produced in nearby states
Similar Impacts for Other Ag Products?

- **Rice** – Most Rice Exported to Asia Shipped via CA Ports, but CA Grows about ¼ of U.S. Rice
  - Unlikely to shift
- **Wheat** – Most Wheat Exported to Asia Shipped via WA and LA Ports
  - Both are nearest to large production areas
- **Meats, Fruits and Vegetables** – Most of What is Shipped to Asia is via CA Ports
  - Unlikely to change as production centers are nearby and/or lower transit times are extremely crucial for these product categories
Cotton/PCE Conclusions

• PCE Impacts Could Be Larger than Estimated
• Competitive Position of U.S. Cotton Enhanced
• Gulf & South Atlantic Ports Stand to Gain
  ➢ Constraints: Depth, Land Area & Funding
• Infrastructure Improvement & Gains Follow Port Development
  ✓ Roads, Bridges, Power Supplies, etc.
• Could Have Similar Impacts for Soybeans and Corn Shipped Out of CA Ports to Asia
• Now that it is Finally Open, We’ll See!!
U.S. Meat and Cattle Trade with Mexico

- Conducted Study for AMS/USDA on the Impacts of Improved Mexican Infrastructure on U.S. Meat Complex (*Final Report under Review*)
- Meat Exports to Mexico have Generally Increased
  - Beef has fluctuated and down from highs, Pork and Poultry Meat have continued to grow, Offal has remained steady
- Beef Imports from Mexico have Grown Significantly while Cattle Imports Up and Down
- Most Exports and Beef Imports through Texas Ports
- Cattle Imports Evenly across 3 Customs Districts
Meat Trade with Mexico

U.S. Exports of Beef, Pork, Poultry Meat and Edible Offal to Mexico via Truck

Million Pounds

- Beef
- Poultry Meat
- Pork
- Edible Offal

Source: USDA/FAS Global Agricultural Trading System
Meat Trade with Mexico

U.S. Meat Exports to Mexico via Truck by Port

Source: USDA/FAS Global Agricultural Trading System
Meat Trade with Mexico

U.S. Beef Trade with Mexico

Million Pounds (CWE)

- U.S. Beef Exports to Mexico
- U.S. Beef Imports from Mexico

Meat Trade with Mexico

U.S. Exports of Beef to Mexico by Port District

Million Pounds

2005: 321.0
2006: 472.5
2007: 415.4
2008: 461.1
2009: 442.7
2010: 351.3
2011: 343.4
2012: 244.9
2013: 282.0
2014: 304.4
2015: 251.7

Source: USDA/FAS Global Agricultural Trading System
Meat Trade with Mexico

U.S. Exports of Pork to Mexico by Port District

Million Pounds

Source: USDA/FAS Global Agricultural Trading System
Meat Trade with Mexico

U.S. Exports of Poultry Meat to Mexico by Port District

Million Pounds

Source: USDA/FAS Global Agricultural Trading System
Meat Trade with Mexico

U.S. Exports of Edible Offal to Mexico by Port District

Million Pounds

Source: USDA/FAS Global Agricultural Trading System
Meat Trade with Mexico

U.S. Imports of Beef from Mexico by Port District

Million Pounds

Source: USDA/FAS Global Agricultural Trading System
Cattle Trade with Mexico

U.S. Imports of Beef from Mexico by Port District

41,000 Lb. Truckloads

Source: USDA/FAS Global Agricultural Trading System
Cattle Trade with Mexico

U.S. Imports of Live Cattle from Mexico by Port District

Source: USDA/FAS Global Agricultural Trading System
Meat and Cattle Trade with Mexico

U.S. Imports of Live Cattle from Mexico by Port District

41,000 Lb. Truckloads (85 Head Avg)

Source: USDA/FAS Global Agricultural Trading System
Conclusions

• U.S. Agricultural Trade is Very Important, and Texas Plays a Significant Role
• Exports of Grains, Soybeans, Cotton, and Meats Move through Most Texas Ports
• Imports of Fruits, Vegetables, Meats, Cattle, Beverages and Coffee through Texas Ports Help to Supply U.S. Food Demand
• Mexico is Major Market for Exports and Source of Imports, but Shipping around the World from Texas and Receive Product from Many Countries
Ongoing/Future Work

• Project for USDA/AMS – Next Big Infrastructure Need at the U.S.-Mexico Border
• Ongoing work with Texas International Produce Association Tracking Import Flows
• Potential Work with the Texas Border Trade Advisory Committee (BTAC)
• Brazil at 2040 – FAS/EMP Project Recently Awarded
Thank you...

Questions??

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