

Chapter Four:

Transporting

U.S. Soybeans

to Export Markets

The handling and transportation infrastructure is what connects U.S. soybean growers to the overseas customers for U.S. soybeans and soybean products. This connection is important for both growers and importers of U.S. soybeans because both profit from the efficiencies with which the infrastructure operates. Efficient rail systems, combined with an extensive barge infrastructure and an extensive highway system give the U.S. producer and world consumers easy access to U.S. soybeans and their products. As a result, the average cost of moving U.S. crops from farm to vessel is the lowest of any major grain and oilseed exporting country.

U.S. Infrastructure

Interior Transportation

Farmers usually have a choice of markets, and generally, they move their production to those markets by truck over excellent “farm to market” roads. Many farmers own trucks capable of carrying up to 30 metric tons for that purpose. Farmers may truck soybeans directly to a processor or an export facility if there is one nearby. The most common practice for a farmer is to truck soybeans to a grain elevator where the soybeans are unloaded, combined with soybeans from other farms, and transferred to another mode of transportation.

One of the other transportation modes for moving commodities is rail. The U.S. has an extensive nationwide rail system capable of moving grain and soybeans to destinations throughout the U.S. Most soybeans and grains are moved in upwards of 40,000 large hopper cars that carry 80 to 90 metric tons each. To achieve maximum efficiency many rail shipments, especially those to export points, are in trains of 100 to 120 cars carrying approximately 10,000 tons that are loaded, moved and unloaded together as a single unit, then returned as a single unit to be loaded again. Many of these hopper cars are leased by exporters and dedicated to their use. There is also a large fleet of tank cars that can carry liquid cargo including bulk soybean oil.

The other transportation method for moving commodities is by barges that move over inland waterways. The U.S. has an extensive system of waterways that stretch from the Upper Mississippi River and its tributaries in Minnesota all the way to the Gulf of Mexico. The Mississippi River Basin waterway system includes almost 10,000 kilometers of navigable water on the Mississippi River, Minnesota River, Missouri River, Illinois River, Ohio River, Arkansas River, Tennessee River, White River, Cumberland River and the Alabama River. Despite the widespread U.S. soybean production area, an estimated 70 percent of U.S. soybean production has access to waterways, as does a majority of U.S. soybean processing facilities. The variable costs of fuel, power and labor plus fixed asset costs of moving bulk commodities by barge via the inland waterway system is less per ton mile than by rail. For this reason, barge movement is the choice for moving soybeans from origin to destination when both are reasonably accessible by water.

The U.S. barge fleet contains about 11,000 covered barges used to carry dry bulk commodities including grain, soybeans, coal, salt, chemicals, fertilizers and ores. There are nearly 2,000 tow boats of varying capacity used to move barges downstream and back upstream again. The most powerful of these vessels can push 40 to 50 barges depending on river conditions with each barge carrying about 1,500 tons of grain or soybeans. This means that a single “tow” can easily contain enough soybeans to load a 50,000 ton panamax bulk carrier.

Along the waterway there are hundreds of river terminal elevators that receive soybeans by truck or rail and transfer the soybeans to barges. Most of these river elevators are not used to store soybeans longer than it takes to bring in the next barges to be loaded; they generally have limited storage capacity and are used mainly as transfer operations from land conveyances to barges.

A unique feature of the U.S. grain and soybean transport system is that the costs for performing the transport function are not fixed. Instead, rail and barge freight rates fluctuate, sometimes rather widely, based on supply and demand. Demand for transportation is high during and just after harvest when large movements of grain and soybeans often occur. At such times demand for rail and barge freight may be high, in which case the market price for transportation is likely to be bid up to relatively high levels. Late in a crop year when movement of those commodities may slow, demand for freight diminishes accordingly as do prices for freight.

Coastal Ranges

The U.S. is unique in terms of soybean export capability in that it has four different coastal ranges. These are the Gulf of Mexico, the Atlantic Coast, the Great Lakes and the Pacific Northwest. Almost every year some soybeans are exported from all four coasts, although by far the greatest volume of soybean exports are made from ports on the Gulf of Mexico.

Total annual exports of all grains and oilseeds from U.S. export terminals seldom reach much above 60 percent of estimated total capacity. As a result, vessel congestion at U.S. export elevators is minimal. Ocean vessels loading soybeans at U.S. ports seldom have to wait more than a few days to move into berth. By contrast, at some other soybean exporting countries, soybean vessels are often forced to wait 20 to 30 days in line to load. With daily costs for vessels ranging from \$10,000 to \$20,000 per day, the time a vessel spends waiting in line for its turn to load can prove very expensive. The buyer pays most of this cost directly to the vessel if he is the charterer, or in the form of a higher price for the soybeans if his purchase is on an FOB basis.

The Gulf Coast

The Gulf of Mexico is divided into three areas that are generally referred to as the East Gulf, Center Gulf and the Texas or West Gulf. The East Gulf refers to the ports of Mobile, Alabama and Pascagoula, Mississippi. The Center Gulf refers to the Mississippi River in the general vicinity of New Orleans, Louisiana, while the West Gulf refers to ports in Texas. Of these areas, the most important by far is the Center Gulf, which is located at the downstream terminus of the Inland Waterway. Soybean export shipments from the East Gulf each year are usually limited to locally grown soybeans for which the East Gulf represents the most convenient market.

There are 12 export grain elevators located alongside the Mississippi River in the general area of New Orleans, all under private operation. They are spread from Myrtle Grove at Mile 61 (61 miles from the mouth of the river) to Baton Rouge at Mile 229. Normally, there is between 38 and 42 feet of fresh water draft at these berths, allowing 50,000 ton or larger vessels to load. A number of these facilities can load more than 50,000 metric tons each day, and some have two berths and can load two vessels at once while, at the same time, discharging barges.

Thanks to the ability to efficiently access supplies by both barge and rail, the Center Gulf is the most important loading area for U.S. grain and oilseed exports. Total annual volume of U.S. grain and oilseed exports are usually in the range of 115 million to 120 million metric tons. On average, 60 percent of those exports are shipped from the Center Gulf each year. In a normal year, soybeans account for 35 to 40 percent of the grain and oilseeds exported from the Center Gulf.

Besides grain elevators, the Center Gulf contains several terminals specifically for the purpose of handling, storing and transferring soybean oil to tanker vessels for export. On the river there are also several floating elevators used to transfer soybean meal directly from barges to ocean vessels.

The Pacific Northwest

The Pacific Northwest (PNW) Coast has long been an important loading point for wheat and barley for Asian destinations. In more recent years, soybeans and soybean products have begun to enter the PNW export mix. This is a result of soybean production in the U.S. steadily moving north and west into Nebraska, Minnesota, and North Dakota and South Dakota.

With that new availability and some reductions in rail costs from the new producing region, the cost of moving soybeans to the PNW has declined and a large volume is exported to Asian buyers every year. A voyage from the PNW to most Asian destinations takes 18 to 20 days less time than from the Gulf. When strong demand pushes ocean freight rates higher, the discount for PNW ocean freight to Asia compared with rates from the Gulf widens, and shipment from the PNW becomes more competitive.

There are five active grain elevators at the PNW located in the Tacoma-Portland-Seattle range. There is also a relatively new terminal facility devoted mainly to loading soybean meal at the Port of Grays Harbor, Washington. This deep-water port facility is a day closer to the markets of the Pacific Rim than any other West Coast port. As U.S. soybean production moved north and west, soybean processors followed, and this has allowed soybean meal to reach the PNW at a lower cost.

The U.S. Atlantic Coast

The U.S. Atlantic Coast was once quite important to U.S. soybean exports. But the role of the Atlantic diminished when rail freight rates were deregulated. Under deregulation, railroads serving the Gulf faced severe competition from barges and water movement, but railroads serving the U.S. East Coast had no competition. That has kept rail rates high going east, so that the geographic freight advantage of a shorter voyage to European destinations is generally eaten up by the higher internal transportation costs. Except for local soybean production, all supplies must be railed in from the central United States, and eastern processors usually absorb the local soybean production to supply the region's huge poultry industry with soy meal and the populous East Coast with soybean oil.

Like PNW ports, the Atlantic Coast export volume tends to grow when ocean freight rates are relatively high, and the freight advantage to Europe from the Atlantic compared to the Gulf grows large enough to compensate for the cost of railing in Midwestern soybeans.

The U.S. Great Lakes along with the Welland Canal that bypasses Niagara Falls and the St. Lawrence Seaway comprise a fourth Coast for U.S. soybean and grain exports. Soybeans and other grain can be loaded to laker vessels at interior ports such as Duluth/Superior on Lake Superior, Chicago on Lake Michigan and Toledo on Lake Erie and moved through the Seaway to large grain elevators located in the province of Quebec along the Lower St. Lawrence River in Canada. There the cargo is discharged into the elevator and reloaded to ocean vessels. Alternatively, small ocean vessels can transit the Seaway inbound and load grain or soybeans for direct shipment with Europe or the Middle East so long as they do not exceed the maximum allowable fresh water draft of 26 feet. Vessels that would exceed that draft limit fully loaded can load partially in the Lakes, then complete loading at a St. Lawrence port.

When a U.S. soybean export shipment occurs from the St. Lawrence, the grades taken when the soybeans loaded at interior U.S. Lakes ports are generally final as to quality rather than a U.S. inspection done at the final loading at a Canadian port. Buyers and importers are usually willing to accept this.

Methods of Shipment

When transporting U.S. agricultural products overseas, the shipper ideally looks for the fastest and most efficient mode(s) of transportation that will deliver the shipment in perfect condition at the lowest possible cost. The actual selection will be a compromise among these factors. The mode(s) of transportation may be specified by the buyer or selected by a systematic approach in which the buyer's requirements, import regulations of the destination country, terms of sale, speed of delivery requirements, and destination and available routes determine the mode.

Bulk Shipments

Bulk carriers haul full shiploads or full hulls of dry or liquid bulk cargoes such as grain, fertilizer, and vegetable oil. Self-trimming bulk carriers (STBC) are the most commonly chartered vessels in the U.S. grain trade business. They are specially suited for grain transport because their bulkheads slope at an approximate 45-degree angle to the horizontal, preventing empty spaces from developing in the wings of the hold.

The self-trimming bulk carrier is the most economical vessel to charter because the holds are easy to clean and loading does not require special trimming, which would make stevedoring more expensive. Some vessels are referred to as PANAMAX type, which simply means the vessels can transit the Panama Canal. The term is typically reserved for bulk carriers in the 50,000 – 70,000 metric ton dead weight tonnage (DWT) range.

Containerized Shipments

Typically, modern liner carriers operate containerships that are designed to transport cargo stowed in 20-, 40-, or 45-foot ocean-shipping containers. The use of containers reduces many risks associated with moving a product, such as adverse temperatures, handling damage, and theft. The most common container sizes are 20-foot

equivalent units (TEU) and 40-foot equivalent units (FEU). A 40-foot container capacity is approximately 27,400 kg.

Supplying soybeans and soybean products in containers provide opportunities for buying direct from the farmer or from smaller exporters. This option is used most commonly for high-value or specialty soybean products, but in certain situations can also be utilized efficiently for soybeans and soybean meal.

Shipping by container allows buyers to purchase from farmer-owned or organized shipping entities. Soybeans are generally higher in quality because they are handled less and as such the amount of split and broken beans and foreign material levels are lower. In addition, containerized shipments provide flexibility to order soybeans and soybean products on a “just-on-time” basis, as opposed to taking positions for large deliveries of bulk commodities from vessel deliveries. In the event there are logistical problems, the demurrage for containers is much lower than that of vessels, thereby minimizing the overall financial risk.

Combination Cargoes

One important advantage to many importers of U.S. soybeans is the ability to combine part-cargoes of soybeans with parcels of other grains to be loaded separately on the same vessel. Because the U.S. is a major exporter of wheat and the predominant exporter of corn and grain sorghum, it is often possible for soybean buyers to combine their shipment with one or more buyers of corn or wheat going to the same destination or perhaps another discharge point close by. In such cases it is possible for buyers to band together and charter a larger vessel that each individual buyer could use. The per-ton cost of a single larger vessel will be lower than for two or more smaller ones thus creating a freight savings for each buyer. Cost-cutting combinations of this order are quite possible from the U.S., but rarely occur elsewhere where the diversity of available grain is not as wide as is the case in the U.S. The difference in freight rates between a 25,000 metric ton soybean vessel and sharing a 50,000 metric ton vessel with someone wishing to ship 25,000 metric tons of corn can lead to a savings of \$2 to \$4 dollars per metric ton for each buyer.

For more information on possible cargo combinations, please contact:

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Transport Documentation

The specific documents required for any given shipment depend on U.S. Government regulations, destination country's import regulations, importer's requirements, terms of sale, method of payment, and mode of transportation.

U.S. Export Requirements - The United States Government requires export documentation for a number of different reasons including national security, control of products in short supply, compiling export statistics, administration of export laws, protection of endangered species, and to protect U.S. export markets by ensuring product quality of specific exports. The main document required by the United States government is the Shippers Export Declaration (SED).

Importing Country Requirements - Each country has different requirements regarding the documentation that accompanies any given import shipment. Importing countries require these documents for the administration of their import laws, assessment of taxes, and protection from hazardous pests and diseases. Some of the more frequently required documents are: commercial invoice, bill of lading, phytosanitary certificate (for plants or plant products), veterinary health certificate (for animals or animal products), packing list, and certificate of origin. Other import regulations that may affect a shipment are packaging and labeling requirements, and recycling laws.

Importer's Requirements - The buyer/importer may require documents in addition to the documents required by their government. An importer may need a specific document in order to receive an import permit from the local government, or to obtain financing from a financial institution. Possible documents requested are: pro forma invoice, inspection certificate for grade and condition, or a statement of processing methodology (depending on the level of processing involved).

Additional Documents - Additional documents are required based on the terms of sale, method of payment, and transportation mode. These documents could include a letter of credit, shipper's letter of instruction, certificate of insurance, dock receipt, mates receipt, bill of lading, and air waybill.

An experienced freight forwarder can assist exporters in determining what documents are required and can complete much of the documentation on the shipper's behalf. Additional sources for determining documentation requirements for any given shipment are: importer, bank, destination country's consulate, and USDA's Foreign Agricultural Service (<http://www.fas.usda.gov/>), Animal and Plant Health Inspection Service (<http://www.aphis.usda.gov/>), and Food Safety and Inspection Service (<http://www.fsis.usda.gov/>).

Slight discrepancies or omissions in documentation may prevent goods from being exported, may result in the shipper not getting paid, or may even result in seizure of the goods by U.S. or foreign customs agents. Completion of much of the documentation is routine for freight forwarders or customs brokers, but the exporter is ultimately responsible for accuracy of the documentation.