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THE IMPORTANCE OF BARGE TRANSPORTATION FOR AMERICA'S AGRICULTURE

by

Jerry Fruin

Department of Agricultural and Applied Economics

University of Minnesota

College of Agriculture

St. Paul, Minnesota 55108

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A well-maintained inland waterway system and a healthy shallow draft barge industry is vital to the well-being of the agriculture in the U.S. Midwest. This area is the world's most efficient and lowest cost producer of corn, soybeans and other crops because of the quality of its land, its favorable climate, and its well-developed production technology. Exports from this region provide the stocks to fill the world's food needs. This is true in times of stress from drought and other natural disasters, but also in ordinary times as a stable low-cost source of food and feedstuffs for consumers around the world.

Table 1 shows that in 1992, 82 percent of the nation's corn, 77 percent of its soybeans and 32 percent of its wheat were produced in ten Midwestern states that rely on barge transportation. These states are bordered or traversed by the Mississippi, Illinois, Ohio and Missouri Rivers. The inland waterway system formed by these rivers is the major transportation route from the Midwest grain production area to export ports on the Gulf of Mexico. Agricultural prosperity in the Midwest absolutely depends on exporting 25 percent of our grain and oilseed production annually. Although grain and oilseeds are also exported from the East and West Coast, the Great Lakes, and the Texas Gulf, approximately 60 percent of the U.S. grain and oilseed exports are shipped from Mississippi River terminals each year. Since the U.S. provides about 43 percent of the grain and oilseeds moving

in international trade each year, this means that over 25 percent of the world's total grain and oilseed trade originates far inland on this low cost waterway.

Table 1

1992 Production of Major Crops by State
(in million bushels)

	Corn	Soybean	Wheat	Total
Iowa	1,904	364	2	2,270
Illinois	1,646	405	62	2,113
Nebraska	1,067	103	56	1,226
Indiana	877	194	23	1,094
Minnesota	741	173	140	1,054
Ohio	508	147	59	714
Kansas	260	68	364	692
Missouri	324	162	65	551
Wisconsin	307	22	3	332
Kentucky	172	44	23	239
Total 10 States	7,806	1,682	797	10,285
U.S. Total	9,479	2,197	2,459	14,134
10 States as Percent of U.S. Production	82.4	76.6	32.4	72.3
U.S. Exports	1,725	770	1,340	3,835

Additional quantities of grain, oilseeds and related products are moved on the inland waterway system to domestic food processors, feedlots and poultry producers. Also, large quantities of processed farm products such as vegetable oil and animal feeds are shipped by barge both to

domestic users and for export around the world. For example, over 9 million tons of animal feed, primarily corn gluten feed exports to Europe were barged in 1992.

Agriculture also relies on the inland navigation system for the low cost transportation of farm inputs. Between 22 and 25 percent of all the fertilizers used in the United States each year are shipped on the Mississippi and its tributaries. Barge transportation is also important for other major farm inputs such as petroleum, petroleum products and chemicals.

In addition to the financial well-being of Midwestern agriculture, farm exports are very important to the U.S. economy and the strength of the U.S. dollar. Farm exports have been one of the few encouraging elements in the nation's balance of trade. Agricultural exports averaged over $41 billion per year from 1990 to 1994 or almost 10 percent of all U.S. exports. The trade balance (total ag exports less total ag imports) for the U.S. agriculture sector averaged $17.2 billion per year over that time period. Consequently, the U.S. foreign trade deficit would have been about 15 percent greater if not for agricultural exports.

Why is an effective shallow draft navigation system essential to a healthy agriculture in the Midwest? The heart of the corn and soybean production in Illinois and Iowa lies 700 to 900 miles as the crow flies from the Gulf ports. Minnesota is over 1200 miles from the Gulf. Table 2 shows the distances from important grain market and collection centers to the export elevators at the Gulf and to alternative ocean ports. These distances from the U.S. agricultural heartland to ocean ports are 3 to 5 times those of any of the competing agricultural production areas around the world. For instance, the prime soybean growing areas of Brazil are all within 200 to 600 miles of the ports of Paranaguá and Porto Alegre. The corn production area of Argentina is only 40 to 400 miles from Buenos Aires. South Africa's corn exporting region lies within 120 to 450 miles from its deep water port of Durbin. All of Australia's major wheat growing areas lie within 80 to 300 miles from the

ocean. The grain growing areas of the European Economic Community are virtually all within 300 miles of a deep water port. Of the major grain exporters, only Canada has to move grain as far, or further, to its export ports than the United States. Canada's solution, of course, has been to subsidize its agricultural exports with the very low "Crow" rail rates, and more recently, with the Western Grain Transportation Act subsidies so its grain can compete in export markets.[1] Canadian shippers pay only about 1/3 of the actual cost of moving grains and products to export points.[2]

Table 2

Distances from Midwest Grain Areas to
Ocean Ports in Miles

	New Orleans			East Coast (Baltimore)	West Coast (Seattle/Portland)
	Rail	Barge	Truck	Rail	Rail
Minneapolis/St. Paul	1273	1670	1346	1193	1745
St. Louis	699	1010	698	920	2187
Peoria	864	1299	862	796	2141
Cincinnati	836	1303	802	582	2422

Therefore, although the United States has an excellent land transportation infrastructure of railroads and interstate highways, and port facilities as good or better than its competitors', the distances from the U.S. heartland to the ports would leave U.S. agriculture with a major

[1]Canada's subsidies of rail rates must be changed in 1995 as a result of the GATT. This will result in substantial shifts in how Canada grain exports are managed. Currently both government agencies and industries in Canada are considering using the U.S. Gulf ports to export grains.

[2]Squires and Casavant, p. 3.

transportation disadvantage if not for the low cost and efficiency of the shallow draft barge system.

Barge costs are low because a typical 9 foot draft barge holds from 1400 to 1500 short tons of cargo, or more than 50,000 bushels of grain. Barges are combined into tows consistent with the characteristics and dimensions of the waterway. For example, tows leaving Minneapolis typically consist of 15 barges loaded with a cargo of 21,750 tons or approximately 750,000 bushels of grain. At St. Louis, below the locks of the Upper Mississippi, barges will typically be placed in larger tows of 30 or more barges for the rest of the movement to the export elevators on the Lower Mississippi near the Gulf. A major factor contributing to the low cost of barging is the energy efficiency of water movements. The low energy use also means that there are less emissions that contribute to air pollution than other modes of transportation.

Although the circuitous nature of the waterways means that barged grain will have to move more miles than rail, the barge costs, and therefore rates, are generally much lower than rail rates between similar destinations. Table 2 shows the mileage by mode from 4 major inland grain collection points to the Lower Mississippi River export elevators. It also shows rail mileage to the East and West Coast. Note that these are "short line" rail mileages which are the shortest distances possible by rail. The actual miles a train travels between two points is frequently greater than this most direct route because of terrain, interchange points, and other operational factors.

Table 3 shows the relative costs of shipping grain from selected points by both barge and rail to Lower Mississippi ports.[3] Barge rates typically fluctuate between the 135 percent and 175 percent

[3]Long distance truck movements were not considered as an alternative because of cost. A very efficient long-distance grain trucking operation would have costs of 3.5¢ per ton mile or greater.

of tariff values shown in the first two columns.[4] Because of the excellent 1994 crops and current strong export demand, rates for the spring of 1995 are currently projected to be the 250 percent level shown in the third column.

Table 3

Comparative Rates in Dollars Per Ton from Midwest Grain Areas
to Lower Mississippi River Ports

	Barge - Percent of Tariff			Rail - Cents Per Ton Mile		
	135%	175%	250%	1.2¢	1.7¢	2.2¢
Minneapolis/ St. Paul	8.36	10.83	15.48	15.28	21.64	28.01
St. Louis	5.39	6.98	9.98	8.38	11.88	15.38
Peoria	6.49	8.41	12.03	10.37	14.69	19.01
Cincinnati	6.33	8.21	11.73	10.03	14.21	18.39

The next 3 columns in Table 3 show probable rail rates between the same points for grain shipped in 50-car unit trains. The rate level of 1.2¢ per ton mile in the fourth column approximates rail unit train variable costs for grain on long hauls. The rate level of 1.7¢ per ton mile in the fifth column approximates the fully allocated rail unit train costs to haul grain for long distances. Unit

[4]Rates have varied from below 100 to over 300 percent in the last 10 years due to extremes in supply-demand conditions. However, quoted rates have averaged 135 to 175 percent over the season in recent years.

train rail rates typically will be between these levels.[5] The rate level of 2.2¢ per ton mile in column 6 is an estimate of a rate level for nonunit trains, low volume or short distance grain moments.

Note that for all four shipping points, barge rates at 175 percent of tariff are less than rail rates at the variable cost level of 1.2¢ per ton mile. Only at 250 percent of tariff do barge rates exceed variable cost rail rates, but even then barge rates are substantially less than the fully allocated unit train cost level of 1.7¢ per ton mile.

Although moving grain by barge is clearly the low-cost method, another consideration is equipment and infrastructure capacity. Although rail capacity (car, trucks, locomotives, sidings, etc.) could be added, the magnitude of such an undertaking should not be underestimated. As noted earlier, each barge moves nearly 1500 tons of grain or as much as 15 rail cars so that each 15 barge tow carries more grain than two 100-car unit trains. If the rail system had to move all the grain and oilseeds that now move on the Mississippi River system, an additional 44,000 rail cars would be required.[6] However, because of the backhaul situation, this large number actually understates the increase in equipment that would be required. The covered hopper barges used for grain downstream are also used for hauling products like fertilizer, salt, coal and similar products upstream so that backhauls are available up to 50 percent of the time. The use of rail grain hopper cars for backhauls has been insignificant in recent years.

To conclude, a healthy, shallow, draft barge industry is essential to the well-being of U.S. agriculture. Sixty percent of U.S. farm grain, oilseed and feed exports (which is 25 percent of the

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[5]Rate levels were computed using the ICC Uniform Rail Costing System (URCS) for select origins and destinations. For example, for a 50-car unit train haul of 900 miles with no interchanges, variable costs were 1.3¢ per ton mile and fully allocated costs were 2¢. For a 50-car unit train haul of 1,344 miles with one interchange, variable costs were 1.2¢ per ton mile and fully allocated costs were 1.7¢.

[6]The U.S. grain car fleet averaged approximately 19 round trips at 90 tons per trip in 1993.

world trade in grain and oilseeds) is transported on the Mississippi River system. This low cost transportation system is also used to transport 25 percent of U.S. farm fertilizer and is important for other farm inputs. U.S. farm exports are a major factor in reducing our balance of payments deficit and maintaining the strength of the dollar.

This low cost system is necessary for the U.S. to compete with other agricultural exporting areas of the world, all of which are much closer to deep water ports.[7] Water is the low cost mode to move bulk commodities such as grain. It is energy efficient, and contributes little to air and water pollution. We can expect barge rates to remain low because there is free entry into the industry. The equipment supply is dictated by market conditions and can not be manipulated by limiting access to facilities or refusal to handle privately owned equipment. The shallow draft waterway system is in place. It is a major contributor to our national economy and to economies around the world. It should be used wisely and productively for the mutual benefit of U.S. agriculture and people around the world.

[7]As noted, the exception, Canada, relies heavily on subsidized rates to compete in world markets.

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