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The Upper Mississippi and Illinois Rivers: Value and Importance of these Transport Arteries for U.S. Agriculture

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**101 South Fifth St.
Columbia, MO 65201
573-882-3576
www.fapri.missouri.edu**



**BRIEFING PAPER ON THE UPPER MISSISSIPPI AND ILLINOIS RIVERS:
VALUE AND IMPORTANCE OF THESE TRANSPORT ARTERIES
FOR U.S. AGRICULTURE**

Introduction

The upper Mississippi River is a 663-mile segment extending from Minneapolis, Minnesota to near St. Louis, Missouri: this waterway forms borders for Minnesota, Iowa, Illinois, Missouri and Wisconsin. The 349-mile Illinois waterway extends from Chicago, Illinois to the confluence of the Illinois and upper Mississippi Rivers near St. Louis, Missouri. Both transport arteries originate important quantities of corn, soybeans and wheat that are transported via the middle and lower Mississippi River to export elevators in the lower Mississippi River port area (3). Past studies indicated over 90 percent of the export-destined corn and soybeans originating in states that border the upper Mississippi and Illinois waterways is destined for lower Mississippi River ports (1, 4). In addition, it is estimated that over half of the U.S.'s corn exports and over a third of the soybean exports originate in states bordering the upper Mississippi and Illinois Rivers and move via these transport arteries to lower Mississippi River ports (1, 4).

Clearly, the upper Mississippi and Illinois Rivers are important transport arteries for north central U.S. agriculture, however, as shown by U.S. Army Corps of Engineers data, grain/oilseed movements on these Rivers is also important to the barge industry (5).

Over the 1998-2002 period, corn, soybeans and wheat comprised about half of the tonnage moving on the upper Mississippi and 40 percent of the tonnage on the Illinois waterway. Also important are the significant quantities of prepared animal feeds, coal,

petroleum, fertilizer, construction materials, chemicals and metals that move on these Rivers.

The dominance of the barge mode in transporting grain and soybeans from the north central U.S. production regions to lower Mississippi River ports centers on the cost advantage of the barge mode in moving low-value bulky commodities over extended distances. A recent comparison of barge and rail rates showed ton-mile charges for barge movements from Iowa and Minnesota to lower Mississippi River ports to be about half that of rail movements. In particular, grain barge rates from north Iowa and south Minnesota barge-loading points to lower Mississippi River ports averaged about \$.007 and \$.008/ton-mile over 2000 –2002, while grain rail rates from Iowa and Minnesota to Gulf ports averaged about \$.014 and \$.015/ton-mile.

The low-cost barge transportation made available by the upper Mississippi and Illinois waterways would seem important to the competitiveness of the north central U.S. in world grain markets since competing countries' production regions are often much closer to deep-water ocean ports than is the remote north central region. For example, the intensive corn and soybean production regions in Iowa and Illinois are up to 1,000 miles from Gulf ports, the principal export range for U.S. corn and soybeans, while Minnesota is about 1,300 miles from Gulf ports and 1,800 miles from Pacific northwest ports. In contrast, much of the soybean production in Brazil is within 400 miles of important Atlantic coast soybean ports at Paranagua, Rio Grande, and Santos (2). Further, Argentina's primary export range, the lower Parana River ports, is within 160 miles of

Argentina's most intensive corn producing region and about 120 miles from the center of that country's primary soybean producing region. Further, Bahia Blanca and Necochea/Quequen, Argentina's principal export locations for wheat are within 150 miles of Argentina's southern wheat production region while Parana River ports are about 120 miles from that country's northern wheat production region (2).

Analyses

To determine the effect of declining transport capacity of the upper Mississippi and Illinois waterways on producer prices, revenues and flow patterns, spatial models of the international corn, soybean and hard red spring wheat sectors were used. The study shows important changes in regional grain flow patterns, prices and revenues as the transport capacity of these inland waterways declines. For example, in Minnesota, corn is increasingly routed to Great Lakes ports and away from the upper Mississippi as its capacity is reduced. In addition, increasing quantities are directed to domestic processors and Pacific northwest ports. Much of Minnesota's redirected corn flow to Great Lakes ports was destined for Europe, north Africa and the Middle East. In Iowa, reduced upper Mississippi River transport capacity yielded several major changes in flow patterns. In particular, as regions in east and central Iowa reduce corn shipments to the upper Mississippi, they increase shipments to nearby processors; this grain replaces corn from central and west Iowa that had been directed to processor demands in central and east Iowa prior to reductions in upper Mississippi River grain-carrying capacity. As a result, corn in central and west Iowa is increasingly rail-carried to Gulf and Pacific northwest ports and demand centers in southwest United States. The increase in Iowa corn

shipments to the southwest United States (e.g., Texas) replaces corn from Nebraska that is subsequently redirected to Pacific northwest ports. Hence, declining transport capacity on the upper Mississippi and Illinois Rivers was shown to have an important influence on flow patterns (3).

The analyses shows revenues of corn, soybean and wheat producers in the north central U.S. decline about \$350 million/year if the upper Mississippi and Illinois waterways were unavailable to transport grain and soybeans to lower Mississippi River ports. Greatest revenue losses are concentrated among Iowa, Minnesota and Illinois producers. Producer revenues' decline as a result of shipments by more expensive truck and rail modes and the increasing quantities shipped into the domestic market at lower prices (3). The analysis does not incorporate truck and railroads' increasing costs and rates that would likely result from the increased transportation demands they face because of discontinued waterway transportation service. In addition, the analysis does not include soft red winter wheat that enters these two transport arteries. Hence, results most likely offer a conservative estimate of grain producer's annual revenue losses.

Concluding Observations

Analysis to evaluate the effect of reduced transportation capacity on the upper

Mississippi and Illinois River showed the following (3):

- The upper Mississippi and Illinois Rivers are central to the transportation of U.S. grain exports to distant deep-water ocean ports. Over half of U.S. corn exports and over a third of soybean exports originate on these waterways for transport to lower Mississippi River ports.

- Ton-mile charges for transporting grain exports by barge from upper Mississippi and Illinois River origins to lower Mississippi River ports is considerably less than corresponding ton-mile rates of railroads.
- The low-cost barge transport made available by these waterways is most likely important to the competitiveness of the U.S. in world grain and soybean markets since much of the competing nations' production (Argentina, Brazil) is comparatively close to deep-water ports.
- The comparatively low transportation costs afforded by access to efficient barge transportation on the upper Mississippi and Illinois Rivers is important to north central U.S. grain and soybean producers. Without this service, it is estimated that revenues to corn, soybean and hard red spring wheat producers would annually decline about \$350 million.
- Producers in Iowa (\$152 million), Minnesota (\$78 million), and Illinois (\$50 million) lose most if denied access to these waterway transport arteries.
- About three-fourths of the total reduction in producer revenues that result from declines in the Rivers' transport capacity is concentrated among corn producers with producers in Iowa and Minnesota experiencing about two-thirds of the total decline in revenues.
- Near the upper Mississippi River in southeast Minnesota, corn prices are projected to decline up to \$.25 per bushel if the region is denied access to barge transportation.

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