96th Congress
1st Session

COMMITTEE PRINT

1980 AGRICULTURAL OUTLOOK

Papers Presented at the Agricultural Outlook Conference
Sponsored by the U.S. Department of Agriculture—
Held in Washington, D.C., November 5–8, 1979

PREPARED FOR THE

COMMITTEE ON AGRICULTURE, NUTRITION, AND FORESTRY
UNITED STATES SENATE

DECEMBER 23, 1979

Printed for the use of the
Committee on Agriculture, Nutrition, and Forestry

U.S. GOVERNMENT PRINTING OFFICE
53-457 O WASHINGTON : 1979

TRANSPORTATION—1980

(By John O. Gerald and Robert J. Tosterud, agricultural economists, Office of Transportation, U.S. Department of Agriculture)

"Agriculture in a World Setting" is the theme of this conference, and it is transportation that makes such a theme relevant. World trade in agricultural commodities has grown from 193 million metric tons in 1974–75 to 260 million in 1978–79. The 1979–80 projection is 274 million metric tons. The share of this trade coming from the United States grew from 45 percent in 1974–75 to 49 percent in 1978–79, and is projected to be 53 percent in 1979–80.

A major factor in the expected increase in U.S. exports in 1979–80 is that of logistics problems in countries that in the past competed strongly with the United States for foreign outlets. Canada, in particular, is reported to be experiencing major problems in marshaling adequate inland transportation capacities for moving grains to ports. Thus, U.S. farmers gain markets by experiencing fewer transportation difficulties than do their competitors. This may be less than comforting to those U.S. shippers who have products for sale but who have experienced inabilities to get products to ports on a timely schedule at reasonable cost.

Since the fall of 1977, grain, soybean, and cotton shippers have reported that on many occasions they use their second and third transportation choices. The growth in export demand for commodities, along with two successive winters of harsh weather, explain some of these service deficiencies, but there have been other contributing factors as well. Bankruptcies of the Rock Island and Milwaukee Railroads, strikes lasting several weeks by the grain handlers at Duluth and Superior elevators and by the railway unions on the Rock Island, explosions at several export elevators, and shortages of diesel fuel have strained the transportation system.

We will comment briefly on the situation in agricultural transportation, and review some of the ongoing developments for which resolutions will affect the adequacy of transport services in the year ahead.

MOVEMENT TO EXPORT

In keeping with the theme of the conference—in fact, there is no other logical way to begin this talk—we look first at the movement of grains, soybeans, and other commodities to ports. The previous session of this Outlook Conference dealt heavily with exports by commodity, so we will focus largely on the aggregate volumes that must be moved to ports and overseas markets.

In 1971–72, the volume of U.S. agricultural exports was 61 million metric tons. The volume exceeded 100 million metric tons for the first time in 1975–76. In 1979–80, we expect the volume to reach about 145 million metric tons—17.1 million metric tons above 1978–79.

In recent years, particularly in 1979–80, the Soviet Union has been the major source of trade to boost U.S. exports. The expected wheat crop for the U.S.S.R. is 38 million metric tons below that of 1978–79, and the estimated coarse grains production is down 23 million metric tons.

Between 1971–72 and 1972–73, exports increased 39 million metric tons—nearly 65 percent. Much of that increase was due to purchases by the U.S.S.R. The second largest relative increase was in 1975–76 when exports exceeded those of the previous year by 22 percent. The way transportation has accommodated itself to those high increase percentages make the expected 13 percent increase in 1979–80 seem manageable; the latest increase comes on top of the others.

Table 1 shows metric tons exported in the 1978 fiscal year and forecast tons for fiscal year 1979. Also shown are projected tons for 1979–80. Grains, soybeans, and their products contribute about 98 percent of the agricultural commodity tonnage going to foreign buyers. They contribute considerably less in terms of value.

In 1978–79, U.S. exports of grains and oilseeds accounted for half of all world trade in these commodities. In 1979–80, the U.S. share is projected at 54 percent. For both years, U.S. share of world cotton trade amounts to 32 percent.

Transporting grains and soybeans

Railroads and water carriers deliver most of the grains and soybeans to ports. For 1977, 1978, and the first 9 months of 1979, figure 1 shows bushels loaded on barges (weekly); figure 2, bushels loaded on railcars (4-week periods); and figure 3, bushels inspected for export (monthly).

TABLE 1.—U.S. AGRICULTURAL EXPORTS: VOLUME OF SELECTED COMMODITIES, 1977–78 AND 1978–79, AND PROJECTED FOR 1979–80

[In million metric tons]

Commodity	Fiscal year—[1] 1978	1979 [2]	Projected for 1978–80
Wheat and flour	32.8	32.3	[3] 38.1
Feed grains	55.5	60.6	[3] 71.1
Rice	2.1	2.4	[3] 3.8
Soybeans	19.7	20.5	[3] 22.5
Vegetable oils	1.5	1.6	[4] .9
Oilcake and meal	5.8	6.3	[3] 6.4
Cotton, including linters	1.4	1.4	[3] 1.3
Tobacco	.3	.3	NA
Fresh fruit	1.3	1.3	NA
Animal fats	1.3	1.2	NA
Total	121.7	127.9	[4] 145

[1] Source: U.S. Department of Agriculture, Outlook for U.S. Agricultural Exports, Aug. 17, 1979.
[2] Forecast.
[3] Projected, crop-year basis. Source: U.S. Department of Agriculture, Agricultural Supply and Demand Estimates. USDA 2404, Oct. 15, 1979.
[4] Projected, fiscal year basis.

Analysis of these series for 1975 to present determined that a 10-percent change in inspections for export was accompanied by only a 3-percent change in the number of bushels loaded in railcars. Period-to-period changes (equating the first six and last six of the 4-week periods in the year to the months of the year) showed that rail loadings and inspections changed in the same directions 39 times out of a possible 55; in opposite directions 10 times; and one of the two series had no changes for six comparisons.

BARGE SHIPMENTS OF GRAIN, INTERIOR RIVER POINTS, 1977-79.

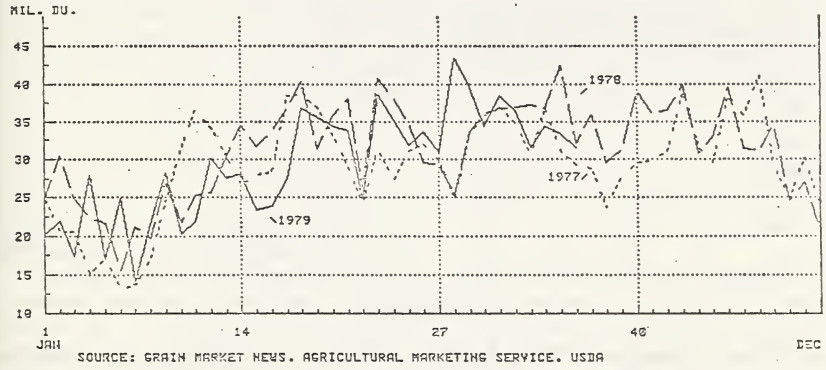


FIGURE 1

Barge loadings reflect some growth over the 33 months shown in figure 1. Due to winter freezes that affected the barge loading series, no special analysis was made of short term relationships between barge loadings and inspections for export. Also, barge transit is long distance in most instances, and round trips for barges take much longer than round trips for unit trains. Therefore, knowledge of appropriate lags to build into the comparisons would be needed to develop a meaningful analysis for barge loadings.

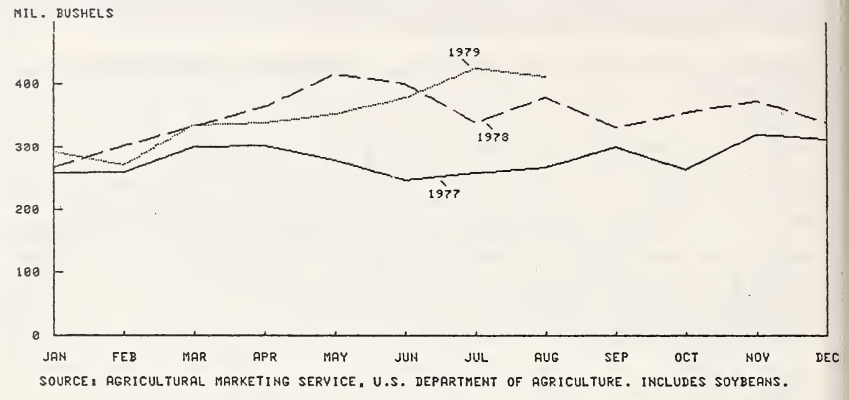
RAIL SHIPMENTS OF GRAIN CONSECUTIVE 4 WEEK PERIODS, 1977-79

SOURCE: ASSOCIATION OF AMERICAN RAILROADS.

FIGURE 2

In the period between January and September 1979, barges moved 1.15 billion bushels of grain compared to 1.23 billion in the same period of 1978, and 1.15 billion in 1977. The late spring thaws of 1979 may be responsible for this downturn.

INSPECTIONS OF GRAINS FOR EXPORT, MONTHLY, 1977-79



SOURCE: AGRICULTURAL MARKETING SERVICE, U.S. DEPARTMENT OF AGRICULTURE. INCLUDES SOYBEANS.

FIGURE 3

Three domestic transportation problems in particular threaten to make it more difficult and costly to increase exports of grains and soybeans. These are the bankruptcies and potential liquidation of certain Granger railroads, continuing shortages of railcars suitable for grain loading, and imminent capacity constraints on the Upper Mississippi River at locks and dam 26. According to a recent analysis by the Economics, Statistics and Cooperatives Service, port facilities also could prove to inhibit further expansion in the shortrun.

Railroad bankruptcies

At present, the Rock Island Railroad is both on strike and in bankruptcy. The Interstate Commerce Commission has directed the Kansas City Terminal Railway Co. to provide service for shippers located on Rock Island properties. But this is an emergency action and may not be sustainable. The Rock Island is having cash flow problems. There also is some evidence that no part of the total system could be a viable core for future operations. Thus the system may require liquidation.

The Milwaukee Railroad is also bankrupt and has cash flow problems. The trustee has identified a viable core in the Corn Belt, but has proposed disposing of all trackage west of Miles City, Mont.

The following tabulation shows thousands of railcar loadings of grain for these two railroads in relation to the total of national railcar loadings of grain:

Year	Railroad		All
	Rock Island	Milwaukee	
1975	99	61	1,343
1976	86	58	1,323
1977	87	52	1,241
1978	95	64	1,341

Source: Association of American Railroads.

Car shortages

Grain is storable and subject to substantial investment risks. Prices of grain are volatile. Rail service is not storable, but the capacity to provide service is also subject to substantial investment risks. Railroad rates tend to be inflexible in the shortrun, particularly because of Federal regulations. The rates for moving grain interstate by truck and in bulk by water are unregulated. At times, the railroads do not have sufficient capacity on hand to meet all immediate demands for service from the grain industry. According to grain shippers, car shortages have existed since late 1977.

Data showing railcar shortages or surpluses are not publicly available for most of 1979. But past relationships between railcar loadings and car shortages suggest that present shortages must be substantial. Railcar loadings and inspections for export have been running at relatively high levels. Slowdown in the general economy may release some cars suitable for grain loading that could be used in meeting export demands. Car builders have backlog orders, some of which were intended for use by commodities other than grains. But, as now forecast, 1979–80 exports are much larger than those of 1978–79, so railcar shortages will probably continue.

Among the railcars used for grain loading are 40-foot, narrow-door boxcars and both small and jumbo covered hopper cars. Based on data from the Association of American Railroads, the long-term trend toward covered hopper cars for grain hauling has been somewhat stable since 1977. The following tabulation shows trends in car types:

Period	Carloadings of grain (percent of cars loaded)		Volume of grain loaded (percent of grain loaded)	
	Covered hoppers	ND boxcars	Covered hoppers	ND boxcars
1972	51.9	48.1	61.8	38.2
1973	48.7	51.3	58.7	41.3
1974	62.7	37.3	74.1	25.9
1975	73.6	26.4	82.6	17.4
1976	78.6	21.4	86.2	13.8
1977	80.5	19.5	87.5	12.5
1978	78.2	21.8	85.9	14.1
1979 (9 mo)	78.1	21.9	85.8	14.2

The aberrations occurring in 1973, 1978, and 1979 are thought to be due to severe shortages of jumbo hopper cars in these years.

Despite the increased use of narrow-door boxcars for grain hauling in 1978 and 1979, ownership of these small-volume cars continues to decrease, and is expected to decline nearly 20 percent by 1981. Small covered hopper car ownership is declining also. Both railroads and shippers are increasing their ownership of jumbo covered hoppers, but shippers are increasing their ownership more rapidly than are railroads (figure 4).

Locks and dam 26

Many grain shippers have expressed the opinion that the economical capacity of locks and dam 26 is likely to prevent any substantial increase of barge movements above current levels. Locks and dam 26 is just below the confluence of Illinois and Mississippi Rivers. Grain barge movements southbound through this facility increased from about 750 million bushels in 1973 and 1974 to nearly 1 billion in 1978.

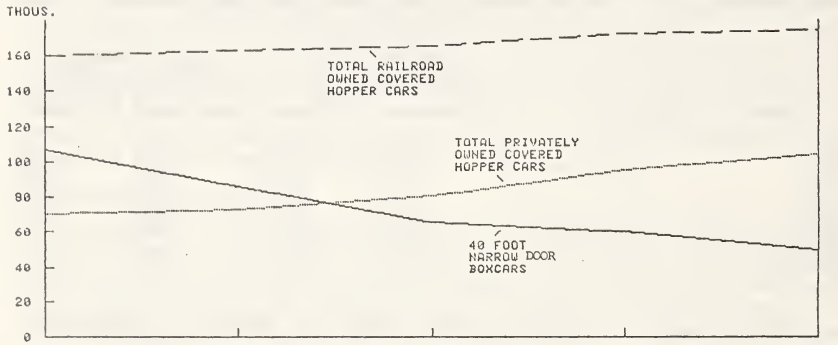
Congress has authorized replacement of the facility, but progress on construction has been delayed by judicial investigation of environmental factors. Also, Congress has authorized the initiation of waterway user taxes to begin in October 1981. Combined together, these factors may dampen the willingness of carriers and/or shippers to invest in new barges and towboats.

Ports and ocean shipping

The U.S.S.R. receives most imported grains through Black Sea ports. This suggests that most of the increased exports to the U.S.S.R. in 1979–80 will move through Gulf and Atlantic ports. However, Great Lakes ports may receive some of this extra tonnage. Japan and other Asian customers may take more of their purchases through Pacific ports, thereby helping to relieve any congestion at the Gulf ports.

Ocean shipping for grains and soybeans has been in plentiful supply since 1974, and will likely be plentiful in 1979–80 unless bunker supplies are disrupted. In early 1979, bunker supplies became somewhat uncertain after the disruption of crude oil supplies from Iran, but conditions have improved since then. Ocean charter rates for grains escalated about 50–60 percent for April–June over those prevailing during the first quarter of 1979. U.S-flag vessels, likely to be required for some of the increased U.S.S.R. trade, are in short supply.

GRAIN CAR OWNERSHIP



* Forecast. ** PROJECTED BASED ON EXPECTED RETIREMENTS AND BACKLOG ORDERS BY THE OFFICE OF TRANSPORTATION, U.S. DEPARTMENT OF AGRICULTURE. SOURCE: ASSOCIATION OF AMERICAN RAILROADS.

FIGURE 4

Cotton

Exports of cotton fiber are expected to increase slightly above the 1.4 million metric tons forecast for export in 1978–79. However, more of the 1979 production—about 77 percent—is in the West and Southwest, long distances from both Gulf ports and eastern mills. This, along with grain shippers' strong demand for any rail equipment that can be used for grain, may cause the narrow-door boxcar shortages that have plagued cotton shippers since early 1978 to continue to 1979–80.

Feed grains, grain mill byproducts, and oilseed cakes and meals

Feed grains, grain mill byproducts, and oilseed cakes and meals are heavily used in feeding livestock in locations other than on the farms where they are grown. Nonetheless, both cattle and hog feeding occurs primarily in areas with heavy feed grain and oilseed production. These are the livestock species that reflect the greatest variability in production levels for year-to-year.

Beef production was 11 percent lower in 1979 than in 1978, but pork and poultry production more than offset this decrease. Pork is produced primarily in Corn Belt States, and corn and protein supplements required only local movements. Poultry is heavily produced in Southeastern and Delta States, and requires the movement of both corn and protein supplements over relatively long distances. However, if broilers require 2 pounds of feed for each pound of ready-to-cook meat, the increased production of 1.07 billion pounds in 1979 required less than 1 million metric tons of feed grains and other feed ingredients. In 1979–80, increased exports of corn alone are projected to be more than 8 million metric tons.

Perishables

If one wants to assess how transportation requirements of agriculture are changing in only aggregative terms, one need simply assess changes in exports. But agricultural transportation requirements may need to be assessed in other ways also. The perishable commodities going to domestic outlets demand different transportation capacities than do the semiperishable grains, oilseeds, and fibers. Water carriers are insignificant as movers of perishable commodities, and the railroads are largely out of the business.

Perishables add up to about 100 million metric tons per year—in order of volume: Fluid milk, red meats, potatoes, fresh vegetables, fruits, and poultry and eggs. Except for milk in bulk, all of these products utilize refrigerated, insulated trailers. The versatility of these vehicles, and the regulated or unregulated status of various perishable commodities provides a competitive setting in which unexpected disruptions can occur in their flow. Rate flexibility permits rapid adjustments for commodities that are not regulated by the Interstate Commerce Commission. But red meats are regulated and have suffered many disruptions in recent years. However, the unregulated commodities were also disrupted in May and June 1979, when shortages of diesel fuel and other conditions caused those independent truckers who lacked the authority to haul regulated commodities for their own accounts to cease operations. They also blockaded some truckstops, and erupted into violence in a few locations. These conditions caused a rapid escalation in truck rates for product shipments to about double the rates that applied just prior to the disturbances. However, data on shipments from producing areas indicate that these conditions made only modest impacts on truck shares and little or no overall impact on movements (table 2).

The administration created two working parties to consider the legitimate problems of independent truckers. USDA has begun to report

truck charges for produce on a weekly schedule, and cost per mile of operating refrigerated trucks monthly. These reports were requested by truckers. In addition, the Secretary has submitted a report to the President that recommends actions to establish contract of haul regulations for produce. The Secretary of Transportation also has submitted certain recommendations, and the Interstate Commerce Commission has instituted fuel price increase surcharges that are passed through to permanently leased independent truckers. These several actions should improve conditions in the year ahead.

TABLE 2.—SHIPMENTS OF FRESH FRUITS AND VEGETABLES BY MODE OF TRANSPORT, 1977 AND 1978, AND MONTHLY 1979

[Weekly averages in thousand hundredweights]

Year	Rail	Truck	Total	Rail share (percent)
1977	1,552	6,596	8,148	19.0
1978	928	6,830	7,758	11.2
1979:				
January	866	6,905	7,771	11.1
February	870	6,433	7,303	11.9
March	1,063	7,387	8,450	12.6
April	1,125	7,824	8,949	12.6
May	1,132	8,744	9,876	11.5
June	2,388	8,735	11,123	21.5
July	1,192	7,609	8,801	13.5
August	------	------	------	----

Source: Economics, Statistics, and Cooperatives Service, U.S. Department of Agriculture. Agricultural Outlook. AO–46, p. 78, and AO–47, p. 25.

Movements of fertilizer

Fertilizer is very seasonal in its use as an input into farming. The spring planting season causes congestion in the fertilizer handling and transporting systems. Warehousing in farm production areas helps spread the transportation burden over a longer season, but, nonetheless, sharp surges occur in late winter and spring. These increases often require special allocations of transport equipment. At times, covered hopper cars are removed from grain transport to help meet the needs for fertilizer movements.

Phosphate and potash nutrients are found in only a few geographic points in North America. These are long distances from the areas of heavy use in Corn Belt and Pacific States. Nitrogen nutrients are produced closer to farming areas. Table 3 shows tonnages of various materials produced in 1977 and 1978. Only a few items showed substantial changes in production between 1977 and 1978.

TRANSPORTATION COSTS

In September 1979, rail freight rates for farm products were 136 percent above their 1969 level. Increases of about 7.5 percent for domestic grain movements and about 11 percent on movements to ports have recently gone into effect. The fuel surcharges in 1979 have also accumulated to about 5 percent. The continuing tight supplies of both diesel fuel and transportation equipment in the 1979–80 crop year portend further rate increases. However, we cannot offer specific projections of 1980 rate levels.

Truck and barge rates are unregulated and are therefore unpublished. Shipper reports suggest that these rates are high in relation to mid-1977 levels.

OUTLOOK FOR 1980 AND BEYOND

The transportation system serving agriculture has been under stress since late 1977, and the expected increase in exports in 1979–80 will cause the stresses to continue. But as the high exports improve farm income, they also provide opportunities for increased revenues to carriers. The flexibilities inherent in our multimodal transportation networks make it possible to increase exports. The cost of achieving export increases has already changed through the cost increases that are implicit in using second or third choices of transport and through the relatively higher rate increases for export modes that have occurred recently.

TABLE 3.—PRODUCTION OF NITROGENS AND PHOSPHATIC FERTILIZER MATERIALS AND PHOSPHORIC ACID, UNITED STATES AND MURIATE OF POTASH, UNITED STATES AND CANADA, YEARS ENDING JUNE 30, 1977 AND 1978

[Amounts in thousand tons]

Material	1977	1978	Change (percent)
Nitrogenous fertilizers;			
Anhydrous ammonia	16, 791	17, 490	+4
Ammonium nitrate, solid	3, 273	3, 051	−7
Urea	3, 982	5, 022	+26
Nitrogen solutions	2, 370	5, 282	+9
Ammonium sulfate	2, 489	2, 333	−6
Phosphatic fertilizers:			
Normal and enriched superphosphate	361	290	−20
Concentrated superphosphate	1, 746	1, 778	+2
Diammonium phosphates	3, 253	3, 714	+15
Other ammonium phosphates	821	893	+8
Other phosphatic fertilizer materials	230	283	+23
Total phosphatic fertilizers	6, 411	6, 958	+9
Wet process phosphoric acid	7, 750	8, 161	+5
Muriate of potash:			
United States	2, 260	2, 294	+22
Canada	6, 234	6, 842	+10

Source: Economics, Statistics, and Cooperative Service, U.S. Department of Agriculture, Outlook Situation 85–9, December 1979, p. 90.

Agriculture shares our complex transportation system with other sectors of the economy. The relative easing of demands by the rest of the economy that appears likely for the next few months may permit the release of some equipment suitable for use by agriculture, especially new covered hoppers ordered for other sectors.

The task of moving the volumes needed for domestic use and of moving 145 million metric tons of agricultural commodities to ports in 1979–80 is achievable. But shippers will have to be vigilant to seize opportunities as they arise. Also, carriers will have to seize opportunities for improving equipment utilization.

Looking ahead to 1981 and future years, several ongoing efforts may prove helpful in expanding the capacity of the agricultural logistics system. Among them are: a restructuring of certain midwestern railroads under the Railroad Revitalization and Regulatory Reform Act of 1976; a review of problems and opportunities in agricultural transportation by the Rural Transportation Advisory Task Force; and

regulatory reform and other administrative and legislative activities at the Federal level; efforts underway to make State rules and regulations affecting interstate truck transportation more uniform; and a growing recognition that transportation trust funds must be replenished through taxing schemes that will keep revenues in balance with needs of the governmentally provided transportation networks.

DISCUSSION ON TRANSPORTATION

(By Byron Nupp, Assistant Director, Office of Intermodal Transportation, Department of Transportation)

J. O. Gerald's impressive statement of the problems in current agricultural transportation proves once and for all that no other sector in the American economy excels agriculture in its experience with the transportation system. And hardly any other sector is more forthright in its expression of views and opinions about its transportation experience.

Despite the vast sweep of experience and knowledge in the agricultural community about transportation, the paper by Gerald documents a chronic condition that can be described best by two words: crisis and improvisation. These words could be emphasized by defining them as recurring crisis and continuing improvisation.

Several other major transportation problems appear to operate in a more structured environment in meeting problems of growth and change:

1. The airlines, airport authorities, and airway system controllers appear to have cooperated, with some hitches, in expanding service and meeting sensitive problems such as airport security.

2. The highway interests have responded constructively in meeting the need for improved service and increased capacity.

3. Urban commuter services, although far from perfection, are moving in the direction of multimodal service through combined Federal and State and local policies.

4. More recently, the problem of energy transportation has been given structured attention by a variety of Federal agencies, energy consumers, and transportation industries.

What are the factors that continue to thrust crisis and improvisation at the agricultural transportation problem? And you may say, "So what? Have we not in the end always moved the stuff despite the trouble and recriminations?"

The same conditions which have made it necessary to tolerate crisis have enabled us to get away with it, so far.

1. There has been overcapacity in both transportation and agriculture. J. O. Gerald remarked that in the current situation many shippers have been forced to rely on their second and third choices of transportation capacity. Surely an interesting way of describing the impact of the excess capacity in the system.

2. There is decentralization and pluralism in both agriculture and transportation. Agriculture has both commodity sectors and geographic dispersion. Transportation has modal divisions and geographic separations.

3. In both fields, public policy institutions and responses are loosely structured. We have extensive regulation alongside free market situations. We have very specified program promotions which we try to fit within broad national policy objectives.

The question arises: Will improvisation continue to be a workable solution for agriculture?

1. Surplus in transportation may be disappearing, driven by the combination of two forces: (A) Secular economic growth which has absorbed some capacity, and (B) economic adjustments in excess capacity illustrated by rail bankruptcy, line abandonment, car service deficiencies, periodic crises in exempt truck capacity.

2. There may be impending changes in the overall agricultural economy, particularly production and marketing objectives, and the long-range prospects of foreign demand.

It seems likely that in the future, the agricultural and transportation interests will have to get together to work out a more structured approach to the recurring problems and crises. There will be two ingredients to this structured process:

1. Joint assessment of long-term goals. Certainly one of these should be an anticipation of changes in national production and marketing processes in the agricultural sector. Another would be the prospects of world trade in agriculture in the longer term.

2. Provision for specified improvements in transportation capacity and services to meet reasonable agricultural goals.

Several transportation issues come to mind in this connection:

1. Development of ports over the long term to meet the growth and changing characteristics of foreign markets.

2. An understanding of the kind of rail capacity that will be needed to meet the changing goals of agriculture, such as numbers and kinds of railcars, their operating doctrines, and the manner in which agriculture will share the capacity with other sectors.

3. Rate, service, and regulatory policies associated with the use of transportation for agricultural goals.

4. Economical use of trucks and barges, and the relation of this use to other transportation modes.

5. Research and planning agendas associated with agricultural transportation. The pioneering work by Baumol et al. at Iowa State University is an example of the kind of overall research that may be needed.

6. Transportation promotional policies consistent with agricultural goals. Lock and dam 26 was mentioned as a facility impacting agriculture. There is a strong agricultural interest in various maritime policies. Roads and rural life are interrelated bases for social policy.

Now, even though I believe that agricultural transportation will evolve into a structured system, I see no need for a highly developed planning bureaucracy or an institution of elaborate written plans. We need to cultivate a community of interest that will combine economic incentives, operational and investment decisions, and Federal policies. Such a process can be very effective as shown in other areas of economic life, including other transportation sectors.

Changes are occurring everywhere in policies and institutions affecting transportation and agriculture. New regulatory philosophies are

in the air. New transportation programs are developing. New problems are emerging to test our abilities. New tools of analysis and new scientific applications will assist us.

We increasingly recognize that the comparative advantage of U.S. agriculture is an important national asset: a contributor both to economic stability and to the welfare of the United States in an international economy. The great objectives of the agricultural community in the United States can be realized. The transportation sector is obliged to act constructively to assist in their achievement.

As a service industry, transportation cannot improve its processes without constructive communication from those it is supposed to serve. We must remove the air of crisis and improvisation, and find a better way of doing business.

DISCUSSION OF A PAPER ENTITLED "TRANSPORTATION, 1980

(By L. O. Sorenson, Kansas State University)

Gerald and Tosterud have done a splendid job of bringing into focus those predictable factors that will influence the aggregate demand/supply balance for agricultural transportation in 1979–80, especially as it relates to movement of products to export ports. To my knowledge, this represents pioneering work of sorts. I am not aware of previous systematic evaluation of future shortrun prospects for agricultural transportation. Shippers, especially small shippers, have frequently had unpleasant surprises in seeking services in the past. This type of effort will reduce the frequency and range of surprises for shippers seeking services of for-hire carriers in a very diverse and unpredictable transportation system.

The authors state that "to assess changing transportation requirements of agriculture in aggregative terms only, about all that is required is to assess changes in exports." Since "grains, soybeans, and their products contribute about 98 percent of the tons of agricultural commodities going to foreign buyers, * * *" aggregate analysis of annual changes in agricultural transportation rightly focuses on export prospects for grain and soybeans.

Expanding export markets for grain and soybeans will most certainly result in continued expansion in requests for services from the for-hire elements of the transport system. By mode, increased demand will be placed on rail and barge transport as a result of projected increases in number of covered hopper cars in 1979–80 of about 6.5 percent over 1978–79 and pending improvements in facilities for navigation on the Mississippi River. However, projected rate of increase in number of covered hopper cars is less than half the expected rate of increase in exports of grain, soybeans and their products and navigation improvement at lock and dam No. 26 will not be completed until after 1980. The authors conclude that "* * * if 1979–80 exports are as much larger than 1978–79 as now forecast, railcar shortages likely will continue * * *"

I agree with this evaluation. Gerald and Tosterud suggest also that a 13-percent (18.3 million metric tons) increase in export tonnage is manageable based on the capacity of the transport system to handle a 65-percent (39 million metric tons) increase in 1972–73 and a 22-percent (18 million metric tons) increase in 1975–76. I agree with this conclusion also. If export orders for grain, soybeans and their products increase by 18.3 million metric tons in 1979–80, I believe we will find a way to move that volume of grains to ports if ocean-shipping capacity is available as it is likely to be. The question is, where does the increased transport capacity in major grain export

corridors come from? Is railcar and barge utilization improved to an extent that a substantially larger volume of grain is moved with existing and modest new additions to existing equipment? Does substantially greater use of second- and third-choice facilities (that is, smaller railcars or truck substitution for rail) occur throughout the system? Or are railcars diverted from small local shippers to major export corridor movements placing much of the burden of freight car shortages on local shipment and smaller volume shipments to domestic users?

I doubt that any of us has conclusive evidence of the pattern of impacts of rail freight car shortages, however, I suspect that impacts are relatively more severe for smaller shippers with the fewest alternatives. Rail freight cars for shipment of grain became in short supply in the early months of 1978 and still remain short. In spite of tight supply Gerald and Tosterud report railcar shipments of grain in the first five 4-week periods in 1978 that were approximately equal to railcar shipments in the same period in 1977 (data for fig. 2). Annual railcar shipments of grains and soybeans for 1978 were about 6 percent above 1977. However, the manager of a cooperative elevator headquartered at Hays, Kans., and representing five elevators at different locations in that western Kansas, High Plains area reported to the U.S. Senate Committee on Agriculture and Forestry [1] in May 1978 that his five elevators received a total of 484 freight cars for loading in the first 4 months of 1977 and 133 in the first 4 months of 1978. Nationally, railcar loadings were approximately 100 percent of 1977, yet Mr. Herman received only 27 percent of the number of cars received in 1977 and only 17 percent of the number ordered. Mr. Herman indicated in committee testimony that his elevators were not unique but instead were typical of conditions reported by other elevator managers in the High Plains in the spring of 1978. Railcar delays were costing more than $34,000 per month at the five elevators in interest charges on unexpected inventory and in late-delivery penalties imposed by grain purchasers.

If this apparent differential impact among shippers of railcar shortages is characteristic, financial impacts of railcar shortages fall heavily upon local shippers and the producers they serve. According to Mr. Herman, "whether we pass on these costs directly, by reducing the bid price or indirectly through reduced savings for our members, the grain producer's income suffers."

In any case further analysis of impacts of changes in aggregate transportation conditions on specific transportation markets would provide more precise insight into the effects of demand/supply imbalance in transport markets. Transportation supply conditions are severely local, varying in type of transportation available and in quality of service made available by carriers serving each market. Understanding relationships between local market conditions and changes in the aggregate demand/supply balance must be refined as transportation outlook moves forward.

Gerald and Tosterud indicate several supply-related situations that have influenced agricultural product movement in 1979–80. These include: Shortages of diesel fuel; railroad, truck and dock strikes; harsh winter; heavy movements of industrial products; directed diversion of freight cars; and railroad bankruptcies. Some of these are fairly

frequent and are somewhat random events, for example, strikes and harsh winter, some of which may be expected to occur nearly every year. Others are continuing conditions that will influence the transportation industry's supply of services to agriculture in the short run—next year—and in the longer run. I would like to comment on two of these conditions, namely; (1) the financial condition of railroads and possible policy responses thereto and (2) fuel cost and consumption in transportation.

Current bankruptcy and possible liquidations of the Rock Island and the Milwaukee in 1980 will affect agricultural transportation supply in 1980, especially supply of grain transportation. The main paper indicates that "The Rock Island is not a major originator of grain * * *" however ensuing data indicate that about 7 percent of total grain originated nationally in a 4-year period, 1975 through 1978, originated on the Rock Island despite the fact that the railroad was in bankruptcy during most of the period. The Rock Island originates 15 percent of all rail wheat shipments in Kansas [2] and provides major direct routes to the gulf and the Southwest, making it an important grain carrier, in my judgment. The Rock Island is an extremely important grain carrier to those elevators on approximately 1,000 miles of rail line in Kansas most of which are served exclusively by the Rock Island. Together, the Rock Island and the Milwaukee originated about 11.5 percent of all rail grain shipments in the 1975–79 period and probably had potential for greater volume under more viable financial conditions. As indicated by Gerald and Tosterud, operation of neither railroad may be sustainable throughout 1980 which will detract significantly from available rail supply of agricultural transportation service.

In the longer run, the condition of the Rock Island and the Milwaukee are indications of what may happen to larger portions of the rail system unless policy options are exercised that will reverse the shrinking capability of railroads to serve agriculture. Railroads have been moved rather dramatically in the direction of serving a small number of routes of high traffic density in recent years, and have become primarily haulers of bulk materials. Efforts to cut cost in rail transport to compete with truck and barge carriers has emphasized mainline, trainload movement. Reduced regulatory control over the rail system will likely accelerate that evolution unless it is accompanied by changes in operating environment for railroads that will provide greater opportunity to develop and introduce cost-reducing techniques. Policy developments in 1980 will be extremely important in determining the kind of service to agriculture to be provided by the railroad industry in the future. It is encouraging that the U.S. Department of Agriculture is providing an active input into policy determination through the Advisory Task Force on Agricultural Transportation.

Fuel cost and availability of supplies caused disruptions in agricultural transportation in 1978–79. There can be little doubt that changes in the supply climate for petroleum fuels in 1980 will affect agricultural transportation characteristics and costs in 1980.

Nowhere are the impacts of fuel shortage more direct or more universal than in transportation. Transportation consumes 54 percent of

total energy consumed in the United States. More than half (53 percent) of transportation energy is used for automobile travel. The Federal Highway Administration estimates [3] that 42 percent of automobile vehicle-miles by rural households (those in unincorporated places) is for purposes of earning a living; 22 percent is for family business; 6 percent is for educational, civic, and religious purposes; and 29 percent for social and recreational purposes.

In agricultural freight transportation, further curtailment of fuel supplies likely to occur in 1980 will affect truck transportation most directly. Trucks are major movers of domestic agricultural freight. Gerald and Tosterud indicate movement of agricultural perishables that total 100 million metric tons per year. This compares with estimated export of grains, soybeans, and their products of only 113 million metric tons in 1979–80.

Increased fuel costs in 1980 may result in disruptions similar to those occurring in 1979. In the short run, the major effect will be increased costs to shippers. Gerald and Tosterud present evidence that elasticity of demand for agricultural freight service is very low in the short run. In the longer run, fuel constraints will result in a search for, and increased use of, the least fuel-intensive type of transportation and efforts to conserve energy through more efficient use of existing transportation investment and technology. Productivity in freight transportation is enhanced when roadway, vehicles, and terminal capacities are matched to avoid delays or excess capacity, when the ratio of payload to gross weight is high, when container vehicle capacity is matched with the capacity of power units, when continuous movement can be maintained, when minimum distance routing of shipments can be attained, when supply of services matches shippers need, and when capital equipment and personnel are fully utilized.

Efficient performance in transportation frequently means economizing on energy use. Expanded understanding of transportation system economics including refinements in analysis of outlook for transportation will contribute to transportation efficiency.

REFERENCES

1. Statement of Kenneth Herman, Hays, Kans., before the U.S. Senate Committee on Agriculture and Forestry, Subcommittee on Agricultural Production, Marketing, and Stabilization of Prices, May 1978.

2. "Wheat Shipments from Kansas, 1972–73," prepared for Transportation Systems Center, U.S. Department of Transportation, December 1974. Kansas Agricultural Experiment Station contribution No. 575.

3. "National Personal Transportation Study—Household Travel in the United States," U.S. Department of Transportation, Federal Highway Administration report No. 7, Washington, D.C., December 1972, pp. 16 and 17.