Moving the Farm Harvest

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In business, there is an old saying that "nothing happens until the sale is made." In agriculture, a sale cannot be made if the products cannot reach the marketplace. Farm products stored at the farm gate are of little value to consumers. Physical distribution operations add value to the farm products by virtue of the transport, storage, packaging, and handling services performed.

Last year, American consumers spent about $17 billion, or nearly 6 percent of their food dollars, for transportation. If agricultural transportation were considered as an industry, it would equal the combined farm value of the wheat, swine, and commercial vegetable industries. Moving millions of tons of farm commodities and food products at the right time and to the right place is an essential and costly activity. Some recent approaches to improving how we move the farm harvest follow.

Modern Business Management Approach

Today, managers are sharply aware of costs of transportation and physical distribution, as they search for a greater share of the market and more profits. Look, for instance, at the dramatic switch in the form and manner of marketing and distributing fresh meat. Today, almost all fresh meat is shipped to retail markets in boxed form instead of as the traditional hanging carcass. Costs of handling are lower, transport equipment requirements are reduced, and freight rates are lower for boxed meat shipments.

The marketing and physical distribution system must react promptly to serve a continuously changing consumer mix. It must maintain the ability to move, handle, and store various-sized packages of products, and be flexible enough to supply both domestic and world markets. The transportation and distribution system must respond to market needs by locating storage facilities and freight terminals at the right places.

Cost Tradeoffs

Most successful distribution executives no longer make shipping decisions based solely on a comparison of transportation rates. Rather, they evaluate, in addition to transportation costs, the total cost of the several individual physical distribution components. This evaluation procedure involves cost tradeoffs. For example, it is possible to select a freight mode, such as air transport, with a higher freight rate that still is cheaper door-to-door than shipping by surface carrier with a lower freight rate. In this case, there is a total cost saving if the tangible costs of packaging, crating, insurance, distribution warehousing, and so forth are reduced sufficiently to offset the more costly rates of air transport. In sum, before shipping decisions are made, a careful analysis of all of the physical distribution costs—plus customer service considerations—must be made.

Just In Time

Cutting costs in important ways has simply become essential. Among the innovative concepts now emerging in the marketplace is a practice called "Just-In-Time" supplier deliveries. A few years ago, when interest rates skyrocketed to double-digit levels, agribusiness and other industry leaders began to ship items as they were needed and thus reduce or eliminate large and costly inventories. Managers controlled the amounts of various materials used in manufacturing within more tightly defined boundaries by receiving items as needed for their plant production line. The idea is to stock only what will be needed or sold in a predictable period of time—no more, but also no less. Essentially, the shipping process becomes an integral and dependable extension of the product assembly line.

The higher levels of customer service resulting from a zero or nearly zero inventory business has put greater pressure on providers of transportation services—tighter scheduling and assurance of reliable transportation. There is no margin for error. But, numerous processors and retailers are finding they can reduce storage requirements and eliminate the loss of goods from aging through "Just-In-Time" programs.

Improved Shipping Techniques

Also, as the distance from farm to final market increases, as market territory enlarges, and as competition intensifies, the development of better shipping techniques greatly influences the fraction of the sales price netted back to the farmer. Within the last few years, the accelerated pace of foreign competition and the many abrupt changes in the farm economy have prompted American farmers, agribusinesses, exporters, and transportation companies to focus even greater attention on productivity improvements in physical distribution and transportation activities.

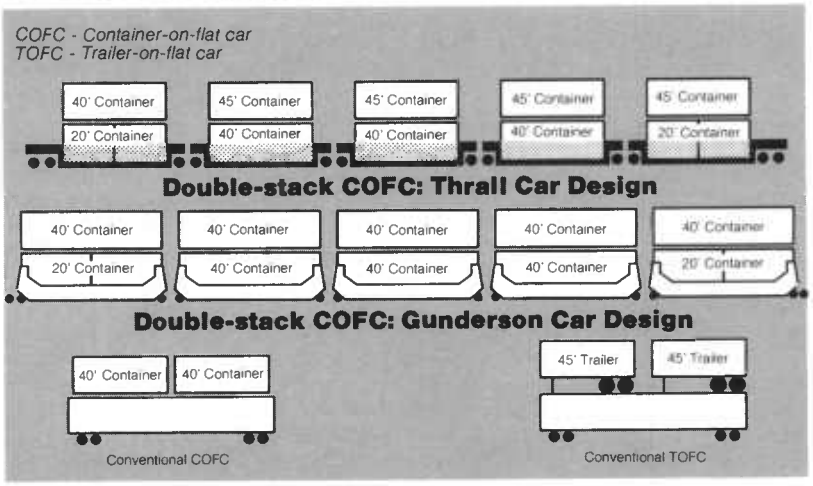
Double-Stack Container Trains

As the volume and value of U.S. imports from the Far East grew rapidly during the 1970's, their high unit value made them unusually well suited to containerization. And, as the use of containers grew, maritime liner companies developed several options to deliver containers to U.S. receivers inland. Motor carriers and the use of special container trains for more distant markets were options, but more often it was simpler to keep the container on the West Coast and merely transload the containerized product into another carrier's equipment. The container was then immediately available to be shipped back, sometimes empty, for more Asian cargo.

The growth of intermodalism (e.g., freight containers placed upon railroad flat cars) has spurred the unveiling of a specialized railroad freight car designed for container traffic. To make fuller use of the protective container and eliminate costly transloading, ocean carriers invested in the development and production of a "welded" rail car that could accommodate one container stacked on another. This special car was needed because ordinary cars stacked two containers high would not fit through standard rail tunnels. With the new double-stacked cars, however, more containers can be placed on each car, and more containers can be carried on each train. The economics were evident and the practice mushroomed. The volume of double-stacked container movements, which amounted to only 30,000 moves in 1984, expanded to over 400,000 moves in 1987.

Double-stacked container rail cars mean that more containers can be placed on each railroad freight car. Thus, more containers can be carried on each train. Such container movements expanded from 30,000 in 1984 to more than 400,000 in 1987. (June Davidek)

Intermodal rail car design



Source: Department of Transportation Staff Study, Effects of Ocean Carrier Double-Stack Container Train Services on Domestic Rail Freight Services SS-42-U-41 June 1986

Today, over 50 special, double-stacked container trains leave West Coast cities weekly, bound for hub centers like Chicago, Memphis, Atlanta, New York, Houston, Columbus, and Cincinnati. Still the containers often return empty to westbound locations because of lack of loads. At the same time, cotton, tobacco, hay cubes, food-grade soybeans, seeds, special wheats, and other food products are often trucked or railed to the West Coast to be loaded in containers for export. This is an opportunity for many agricultural shippers to lower freight costs and improve market competition. Testing and evaluation of containers for the movement of perishable farm products continue—but no consensus as to a best new design for double-stack refrigerated containers has yet emerged.

Furthermore, in anticipation of future international business growth, some maritime companies are investing hugh amounts of capital in vastly larger container-carrying ocean vessels. Applying state-of-the-art shipbuilding technology, such ships stretch the length of three football fields, are nearly 130 feet wide, and have a container capacity of up to 3,900 TEU's (20-foot equivalent units). Improved fuel efficiency, speed, reliability and other economies of size could result in substantial cost savings per container.

Unit Trains

A popular method of achieving improved productivity in transporting bulk agricultural commodities over considerable distances is by unit train. A unit train usually consists of 25 or more jumbo-covered hoppers (rail grain cars) between 4400 and

Unit trains, like the one at the left, usually consist of 25 or more jumbo-covered hopper cars. They are capable of moving large quantities of grains to terminal facilities such as this one where barges are being loaded. Most agricultural commodities transported by rail for export move in unit trains.

4800 cubic-foot capacity hauling a single commodity between two points.

Shippers of corn, wheat, barley, and other whole grains are using these trains to move one commodity between one or several origins and destinations, but through recent technology, jumbo-covered hoppers are being developed for dual service—so that two commodities, such as wheat and rye, can be loaded side by side in the same car. This versatility allows for both merchandisers and receivers to tailor their requirements in domestic markets for what they need—raw commodity or finished product. In addition to grain, unit trains are widely used to move perishables, canned foods, coal, chemicals, and ores.

Unit trains of 25 or more cars further contribute to the marketing of agricultural products since railroads often encourage their use because of efficiencies gained over single or smaller multicar shipments. These efficiencies may be realized through the limited number of origins and destinations, automation, better turnaround time (in some cases half that of single car movements), and maximum crew and equipment utilization. Another advantage to the railroad industry is the ability to keep better track of its equipment. As one rail industry official put it, "cars are not scattered all over the country."

Most agricultural commodities that are transported by rail for export move in unit trains. Export elevators are designed to handle 100-car trains. One major Western railroad, the Nation's largest carrier of grain and grain products, transports 60 percent of its whole grain traffic in unit trains. The carrier has a fleet of 27,000 jumbo-covered hopper cars available for its use, consisting of its own cars as well as those owned by grain cooperatives and private grain companies that have purchased or leased the rail cars.

A major benefit to the cooperatives and companies who use unit train services is lower freight rates. Volume rates associated with larger capacity equipment and unit trains create a major incentive for grain marketing organizations to streamline their collection and distribution practices. As a result, farm-to-market price differentials have declined and farmers have benefited.

Improved Information Systems

Greater intermodal transportation (combining the advantages of different modes of shipment) and unit train movements will result in a greater need for timely information of all types. Complex applications of communications lines that link both voice and computer data of the many transportation users and providers could inevitably lead to totally paperless documentation of shipments by substituting electronic communication for today's mail systems. Efforts are underway to tie together customers, carriers, and the several U.S. Government agencies through computers to handle the increased information workload without significantly adding to staff.

Advances in computer-based information systems also enable transportation and physical distribution managers to evaluate a host of options quickly and more thoroughly than ever before. The availability of computerized problem-solving programs that produce simulations of vehicle routes and schedules, return on investment, and cost analyses, plus other "what if" solutions are increasingly valuable tools for agribusiness management in the quest for profit improvements and greater efficiencies in moving the farm harvest.