Cooperative Transportation and Distribution

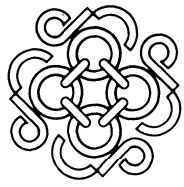
COOPERATIVE INFORMATION REPORT 1
SECTION 12

U.S. DEPARTMENT OF AGRICULTURE
ECONOMICS, STATISTICS, AND COOPERATIVES SERVICE

Contents

"Cooperative Spirit," a towboat owned by the cooperative barge line Agri-Trans Corporation is shown on the cover. Below is a covered hopper car operated by Missouri Farmers Association. The towboat and railcar represent major transportation advances by cooperatives in the past decade—ownership and leasing of barging and railcar equipment and large-volume shipments of products coordinated with backhaul shipments of production supplies.

Cooperative Transportation and Distribution



Physical distribution in a farm marketing or supply cooperative involves the total concept of managing products or materials moving to, within, and from cooperatives. It generally includes transportation, warehousing or storage, order processing, inventory management, materials handling, packaging, plant location, and the logistics of raw materials, intermediate supplies, and finished products.

Importance of Physical Distribution

Physical distribution is important to almost all cooperatives. Distribution costs comprise 20 to 50 percent of the selling price of a product, thus often affording many opportunities for improving operating efficiency and service to patrons.

Distribution management begins with an order to buy or to sell and may bring into play several divisions or functions of a cooperative. Decisions must be made on when, how, and where the shipment is to move. Decisions often are made by several people without adequate communication or coordination among them. In an increasing number of larger cooperatives, orders are entered directly into computers to provide printouts for preparing bills of lading and other shipping documents.

Physical distribution considers total costs of handling products. For example, a decision resulting in least-cost transportation might mean higher overall costs to the cooperative if it should result in increased inventory or protective packaging costs.

Management often faces complex marketing problems brought about by changes in customer buying habits and demands

for service. It needs to consider these factors in locating plants and warehouses and designing trailers and containers that will give it flexible storage and transportation systems.

Transportation management includes selection and continual evaluation of different modes of transportation. It also involves such activities as analysis of freight rates and freight bills, filing claims, as well as developing programs for maintenance of product quality and minimizing losses in the movement of farm products and supplies.

Estimates indicated that the transportation bill alone for products handled by farmer cooperatives during the business year 1971-72 (the latest data available) was about $1.5 billion, or about 7 percent of the $21.7 billion worth of products moved. About three-fourths was for moving farm products and one-fourth was for transporting farm supplies. Cooperatives paid directly for 75 to 80 percent of this cost. Further estimates indicate that if cooperatives could reduce their transportation costs by 10 percent, this would be equivalent to increasing their annual net margins by about 25 percent.

A study of 68 of the largest cooperatives in 1971 showed 65 had outbound shipments of 71.1 million tons with 27 percent moved by their own trucks. Fifty-eight reported inbound shipments of 65.1 million tons with 18 percent moved by their own trucks. Sixty-four reported their yearly transportation bill totaled $740 million.

Almost all farmer cooperatives that handle products operate motor trucks. Their selection, maintenance, scheduling, and operation are important factors in minimizing operating costs. In addition, the larger cooperatives operate many kinds of specialized equipment such as highway transports and trailers, covered hopper and tank cars, and barges. One of the largest cooperatives, Agway Inc., Syracuse, N.Y., reports that in its daily operations about one of every three employees drives some kind of vehicle—from half-ton pickup trucks to applicator and delivery equipment and 18-wheel tractor trailers. Many cooperatives are thus faced with the question of whether to own or lease trucks and railcars and with the problem of developing a program for maintaining their trucks.

Changing conditions also pose questions about the most effective type and location of warehousing and transportation systems for local cooperatives and their regional associations providing wholesale supply or regional/ terminal storage and distribution

services. Questions also arise about the feasibility of consolidating or centralizing warehousing—both for farm products and farm supplies. This may include the joint use of warehousing facilities by several marketing and farm supply cooperatives.

Transportation Developments

Although transportation is closely related to the physical distribution system, it is discussed separately.

Cooperatives have made progress in recent years in the development and management of transportation functions and facilities. Some of the principal developments follow:

1. The larger cooperatives have given more recognition to transportation in staffing and management priority.

Titles have changed from rate clerks to traffic managers, to directors of transportation, and in a few cases to directors of physical distribution. Some of the transportation directors now report directly to the assistant general manager or general manager.

2. Many local cooperatives, as they have become larger and operated more motor vehicles, fertilizer application equipment, and other types of equipment, are giving more attention to their costs of operation and to preventive maintenance programs.

3. Leasing of railcars has increased.

Cooperatives own or lease some 9,000 railcars — mostly covered hoppers. Twenty-one regional grain cooperatives operate about 3,500 of these cars. Most of the cooperatives' railcars, however, are used only on a one-way haul basis. Several sublease or have back-to-back leases of railcars with other cooperatives and with other firms to keep their equipment productively employed during off-season and other slack periods. For example, Farmland Industries and Far-Mar-Co (now a Farmland subsidiary) each bought 50 jumbo covered hopper railcars in 1973 for grain use in harvest and fertilizer use in the spring and early fall. Each car holds 3,300 bushels of grain or 100 tons of fertilizer.

4. Cooperatives have improved their position in handling shipments by water.

Twenty-nine of the 71 grain terminal and subterminal elevators of cooperatives are now located on navigable rivers or at a port. Cooperatives now operate elevators in every major port range.

One regional cooperative leased 50 barges and another owned 10 barges-principally for shipments to the Gulf Coast-at the end of fiscal 1975.

Early in 1974, five regional grain marketing cooperatives and CF Industries, Inc., Long Grove, Ill., a national fertilizer manufacturing cooperative, purchased the assets of Rose Barge Lines, St. Louis, MO., consisting of seven towboats and more than 200 barges and began barging fertilizer ingredients northbound and grain southbound to the Gulf. Since that time, the new co-op barge line-Agri-Trans Corporation, Long Grove, Ill.-has increased its fleet of barges and towboats as business expanded. It is managed by CF Industries, Inc. The five regional cooperatives sharing ownership of Agri-Trans are: Farmers Union Grain Terminal Association, St. Paul, Minn.; Farmers Grain Dealers Association of Iowa, Des Moines; Illinois Grain Corporation, Bloomington; Missouri Farmers Association, Columbia, and St. Louis Grain Corporation, St. Louis, MO.

In 1976, Agri-Trans added a new towboat to its fleet. The 10,500 h.p. towboat, which is more than 200 feet long, is the largest commercial towboat now operating on the inland river system. Also, to complete the cooperative barge chain, a new 22,500-ton barge vessel joined the Agri-Trans fleet to haul phosphate products from the Tampa, Fla., port to the lower Mississippi river for transfer to smaller barges for the trip upstream.

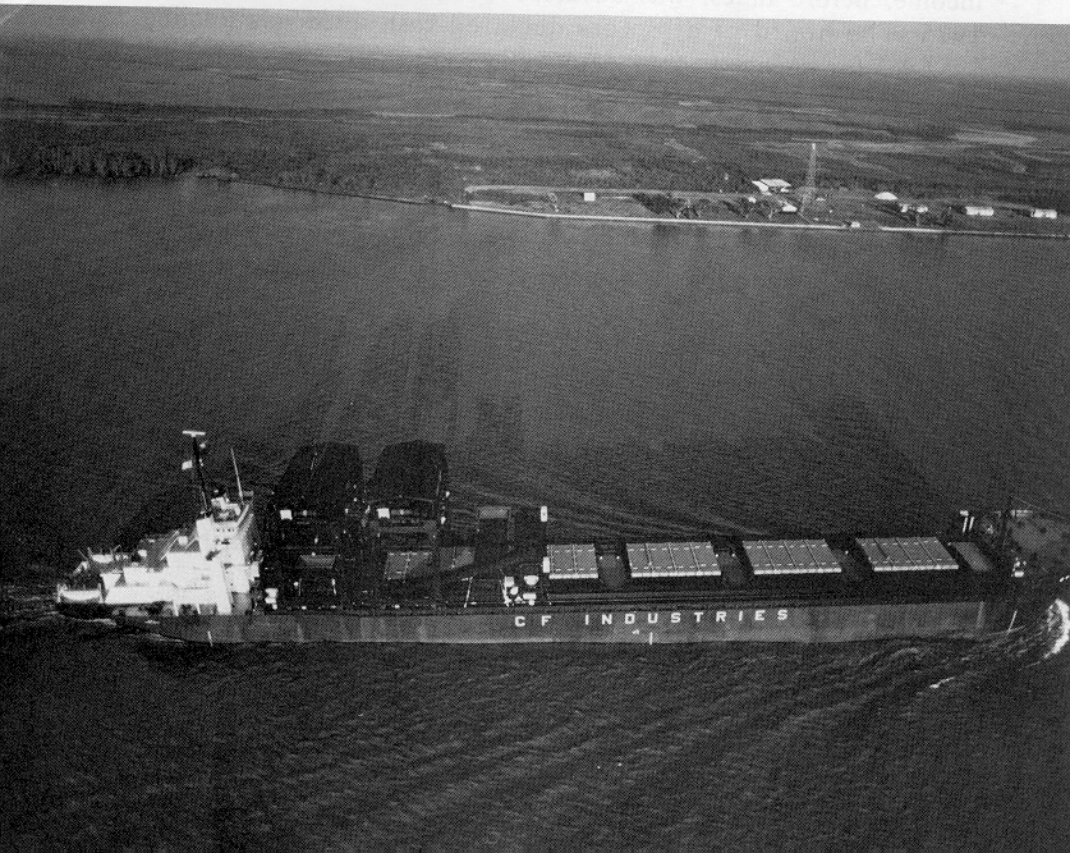
During fiscal 1976, Agri-Trans handled more than 2,500 barge loads, moving 3.6 million tons of freight.

The cooperatives' own barge line permits the utilization of additional river storage warehouses for fertilizer throughout the Midwest. CF Industries thus plans new phosphate warehouses at Clinton, Iowa; St. Paul, Minn.; Granite City, Ill., and Cincinnati, Ohio.

The cooperative barge line assures members an adequate supply of equipment, when needed, at a reasonable rate. But, most importantly, the cooperatives have been able to mold the barge line's services to meet their individual needs. Or, as an executive of Agri-Trans stated, "for the first time, the American farmer, through his cooperative, controls the movement of needed supplies to his farm and the shipping of his products to market."

The Michigan Elevator Exchange, Lansing, in 1975 added another "first" to its pioneering efforts in transportation concepts. This was the shipment of 3,000 tons of edible beans to the Mediterranean area by way of the LASH ocean transport system.

Van containers of citrus from Citrus Central, Inc., are hoisted aboard ship destined for overseas markets. A relatively new concept among ocean-going cargo vessels is shown below. The "Jamie Baxter," owned by CF Industries, consists of independent tug and barge components. Its primary assignment is cross-Gulf hauling of phosphate fertilizers from Tampa to New Orleans.



It involved towing barges to Charleston, SC., where they were lifted into the hold of an oceangoing mother ship.

5. In 1972, five regional cooperatives (Midland Cooperatives and Land O'Lakes, Inc., Minneapolis, Minn., and Farmers Union Grain Terminal Association, Farmers Union Central Exchange (CENEX), and Mutual Service Insurance-all headquartered at St. Paul, Minn.) formed what is now known as Interregional Service Corp. (ISC), Minneapolis. It was set up to develop a program of procurement, maintenance, disposal, and joint use of equipment, principally trucks and automobiles, leased from ISC for the regionals.

In 1975, Indiana Farm Bureau Cooperative Association, Indianapolis, became a member. During that year alone ISC purchased $8.6 million worth of transportation equipment for lease to its members. This consisted of 238 tractors and trucks, 109 trailers, 35 specialized bodies, and 257 automobiles. Savings on this equipment ranged from 6 to 9 percent, or from a half to three-quarters of a million dollars.

ISC's 1976 yearend assets totaled $27 million, a 32.2 percent increase over the previous year, and net worth was $3.4 million, an increase of 27 percent. Gross revenue for the year was $6.9 million, or 34.8 percent more than the year before. Net income, before taxes, was $872,130 compared with $652,682 in 1975. The board of directors declared cash dividends totaling $252,465 for payment to cooperative lessees.

In addition to the cash dividends, $219,933 is being returned to lessees in the form of experience rating credits and rental refunds from the corporation's service leasing and service realty divisions. On December 3 1, 1976, after 5 years of operation, ISC has a total of $43.7 million worth of equipment and facilities on lease to cooperatives, an increase of 53.9 percent over the previous year.

CENEX for many years utilized a decentralized warehousing and transportation system for distributing its supplies, but is changing to a more centralized system. Beginning in 1972, it launched Operation Interface, designed to improve the distribution of warehoused products, with emphasis on product availability, speed, and efficiency. To accomplish this, CENEX is centralizing its distribution system from the present 11 distribution centers to 4.

At the same time, CENEX is centralizing control of its trucking operations. In the past it depended largely on area truck-

ing cooperatives to haul products throughout its territory. Now through merger and acquisition of some of these trucking cooperatives such as Northern Cooperatives, Wadena, Minn.; West Central Cooperative, Benson, Minn.; and Farmers Union Federated Cooperative Shipping Association, Minot, N. Dak., CENEX is centralizing and expanding its trucking fleet, which at the end of 1975 totaled about 170 tractors and 260 trailers and tank trucks.

Several specialized petroleum transport cooperatives operate in the Midwest and haul refined fuels for their member local associations-often ranging from 3 to 10 in number. And large locals may haul fuels for two or three smaller adjoining local cooperatives.

6. The shift from can to farm-tank assembly of milk has almost been completed.

This change has resulted in a widely expanded role of dairy cooperatives in both farm-to-plant milk assembly and plant-to-plant milk hauling. Cooperatives are becoming responsible for milk assembly route organization and supply movement.

In an effort to obtain potential cost savings, cooperatives are reorganizing milk assembly routes and developing least-cost milk hauling systems. Use of 5,500-gallon farm assembly trucks is common in many areas. Over-the-road hauling is performed with double trailers ranging up to 12,500 gallons per unit.

A few cooperatives are developing "cost justified" systems of charging producers and paying haulers for hauling services. In this way cooperatives can encourage the use of larger trucks and gain the flexibility needed to move milk efficiently to outlets according to need without changing the hauling charges to producers located on the particular routes.

7. Rail line abandonments and service curtailments are of increasing concern to cooperatives.

Cooperatives, as the principal originators of grain in the surplus areas and as receivers of grain in deficit areas, as well as principal handlers of many farm related products, are extremely sensitive to rail line abandonments and service curtailments.

The Railroad Revitalization and Regulatory Reform Act of 1976 provides a mechanism for determining the long-term as well as the short-term effects of rail abandonments throughout the

Cooperatives own or lease a great number and variety of rolling stock to haul milk, propane . . .

. . . feed, petroleum, fertilizer, and other supplies between farm and cooperative and manufacturing and processing plants.

country. Subsidies can be provided to continue rail operations during a period of study for determining if the line should be continued or if alternative means of transportation can be provided.

Cooperatives will need to play an increasingly important role in "making a case" for their own rail needs as well as the needs of rural areas in general as new programs are implemented to provide means for more public participation in rail abandonment decisions.

8. Bulk delivery of feed and fertilizer continues on the increase. A study in 1969 indicated three-fourths of the cooperatively manufactured feed moved to farms in bulk, and 49 percent of this was delivered with cooperatives' own trucks. Fifty-six percent of their ingredients came in by truck, with 17 percent hauled in the cooperatives' own trucks.

Cooperatives have moved rapidly into bulk blending and field application of fertilizers, especially liquids, in recent years. Data are not available on quantity handled but on January 1, 1971, they operated 2,203 bulk blending plants, 554 holding stations, and 1,656 ammonia stations. To move and apply plant food, they operated several thousand dry spreaders, spreader trucks, and liquid applicator rigs and nurse tanks.

A few cooperatives also owned airplanes, or contracted with operators, to seed and apply herbicides and insecticides by air on members' fields.

9. In recent years, a number of transportation companies have been formed that claim to be bona fide farmer cooperatives and thus entitled to be exempt from Interstate Commerce Commission regulation under section 203(b)(5) of the Interstate Commerce Act. Several of these firms, referred to as "pseudo" or "sham" cooperatives in the press, have been stopped from the interstate transport of commodities because they were not operating within the meaning of the cooperative exemption, nor did they have proper ICC operating authority. The U.S. district courts found that they were not being operated as true cooperatives for the mutual benefit of farmer-members and that they had illegally transported nonexempt goods. Early in 1977, the Interstate Commerce Commission asked for comments and statements from interested parties regarding proposed new regulations that would assist in redefining the exemption.

Distribution of supplies on a custom basis is increasing, including aerial applications of pesticides and a variety of ground applications of fertilizers from bulk blending plants.

Implications of Transportation Changes

In the days and years ahead, transportation management must assume an even more important role in the overall cooperative management function. Rapidly changing cooperative marketing and distribution requirements as well as the transportation environment with its rail abandonments, railroads in bankruptcy, and the question of degree of regulation will demand this. Six of these developments or changes and possible implications to cooperatives are as follows:

1. Increased emphasis by railroads on abandonment or curtailment of service, primarily on light density lines, will require possible facility relocations and changes in cooperative marketing and distribution methods.

2. Rapidly increasing labor, handling, and building costs will require consideration of alternative and perhaps less sophisticated transportation, storage, and handling facilities and methods, particularly for bulk commodities.

3. Increased need for better control of the movement, storage, and handling of their products will encourage cooperatives to own or lease more transportation equipment.

4. Energy shortages will bring increased emphasis on maximizing use of more energy efficient transport modes, such as rail and water and better utilization of all modes, particularly trucks.

5. Greater need to offset increased transportation costs and curtailed services will increase the emphasis on intra- and inter-cooperative coordination and consolidation of shipments.

6. Increased costs of equipment, labor, and fuel emphasize the need for better care and maintenance of trucks and other transportation equipment.

Many of these developments have been with us for some time but are accelerating in importance and will intensify even more in the years ahead. And as mentioned, many cooperatives have successfully met these developments with active programs designed to improve service and lessen the impact of change, but much more can be done. Examples are as follows:

1. Improve the utilization of railcars. Cooperatives should study and consider the following:

Develop an inter-cooperative, coordinated pool car program for cooperative owned or leased railcars to improve utilization by matching off peaks and troughs of supply. Such a program should be explored because:

a. Possibilities are apparent for reducing costs and improving service through better utilization of the equipment.

b. Advantages of private car operations could be made available to local and marginal-need cooperatives that presently can't justify 0perating their own cars.

c. Cooperatives, through centralized pool car operations, could get more muscle in dealing with railroads and regulatory agencies in establishing more favorable multicar and unit-train rates and equitable mileage allowances, and in eliminating discrimination on the part of some railroads in utilizing shipper owned or leased cars.

2. Locate grain and fertilizer facilities in the grain-producing areas near each other to facilitate two-way loaded movement and achieve greater utilization of hauling equipment.

3. Explore possibilities for service and rate incentives by carriers that would encourage shippers to develop programs to coordinate two-way loaded movements of grain and fertilizers.

4. Consider leasing locomotives to achieve greater control of movements, and thereby increase cooperatives' car utilization, improve car scheduling to match loading times of ships, and increase port elevator utilization.

5. Develop better preventive maintenance programs for transportation equipment. A good preventive maintenance program can be most effective in helping to:

a. Assure vehicle safety, which can reduce the loss from personal injury as well as loss and damage to the cargo.

b. Prevent road failures, which may result in costly emergency repairs, lost time, and uncertain delivery schedules.

c. Extend the life of various components by reducing the possibility of damage to related parts by a worn or broken part.

d. Reduce maintenance costs by repairing or replacing faulty equipment at the convenience of the shop rather than on an overtime basis due to a breakdown at an inopportune moment.

An effective preventive maintenance program must be well established and carefully monitored on a continuing basis. The success of a good program depends on several factors, all of which are important.

a. The program must have management support and must be competently supervised.

b. Lubrication and inspection operations must be performed thoroughly by qualified personnel and in accordance with the manufacturers' specifications.

c. Adjustments, repairs, and parts replacements must be made promptly by qualified mechanics to obtain maximum benefits.

d. A detailed record of inspection and repairs must be properly maintained on a current basis for each vehicle.

e. The action calling for the inspection or maintenance of each piece of equipment should be triggered from a constant analysis of the records and reports kept on file for each vehicle.

f. All activities and costs, including fuel, oil, and tires, carried out in the preventive maintenance program must be recorded and charged to the vehicle receiving the work.

Proper maintenance of field application equipment also is important. A good job of painting tanks and applicators not only helps prolong their life but portrays a better image to both farmers and the public.

6 Conduct studies to determine advantages and disadvantages of leasing versus owning transportation equipment as conditions change in various areas.

7. Conduct studies of opportunities for joint or intercooperative ownership and operation of transportation equipment such as trucks, railcars, barges, and possibly branch railroad lines in cooperation with other business firms in the areas concerned.

Distribution Developments

Almost all of the 7,600 marketing and supply cooperatives have one or several local warehouses or storage facilities, and many own large terminal storage elevators or warehouses.

Many cooperatives have modernized, mechanized, or centralized their warehousing and materials handling facilities and equipment in recent years. Examples of recent developments are:

1. The warehousing segment of physical distribution has been given more attention, especially by the larger cooperatives. Some have added materials handling managers or given more responsibility to warehousing supervisors.

2. Several farm supply cooperatives have centralized and automated their warehouses. As examples, Agway consolidated its 9 warehouses into 3 regional distribution centers; and as stated previously, Farmers Union Central Exchange (CENEX), recently reduced its 11 warehouses to 4.

Midland Cooperatives, Inc., Minneapolis, Minn., was one of the early regionals to modernize its warehouse materials and

Bulk hauling of supplies such as fertilizer often require specialized equipment.

order-handling operations. Through use of WATS lines, computerized ordering, and operation of its own transportation fleet, Midland is able to efficiently service its entire area out of one warehouse.

Southern States Cooperative, Richmond, Va., recently consolidated and reduced the number of warehouses it operates after conducting a study of the problem.

3. Use of containers in shipping has increased. Some cooperatives have been making more containerized shipments of products in recent years. For example, Michigan Elevator Exchange, Lansing, in 1970 began moving dry beans for export in large steel containers holding 400 bags, or 40,000 pounds. Formerly beans were marketed in burlap bags piled in the holds of vessels. Then in 1973, the Exchange obtained a sufficient reduction in rail rates to permit loading containers at Saginaw onto flatcars for direct movement to Montreal and other Canadian ports. Previously, containers had to be trucked to Detroit, barged across the river to Windsor, and reloaded on eastbound railcars. On return trips from France and Belgium, the containers bring back auto parts and other materials. A more recent trend is toward shipment by bulk in huge boxes with plastic liners.

4. Several food processing associations have joined to provide warehousing, distribution, and related services through their own cooperatively controlled facilities.

In 1970, a number of major cooperatives formed Agfoods, Inc., Fleetwood, Pa., to jointly handle their products primarily in the Mid-Atlantic market through a common forward distribution warehouse. Since the start of operations in 1971, Agfoods, Inc., has been so successful that it has outgrown its facilities three times. Its latest expansion includes the opening of a new forward distribution warehouse in Columbus, Ohio, in October 1976 and the projected opening of another in Florence, N.J., some 3 months later.

The success of Agfoods, Inc., can in large part be attributed to the members' ability to control their own distribution operation. This allows them to establish a highly efficient handling system and to consolidate deliveries. Another prime reason for Agfoods being so successful is its dedication to providing a guaranteed delivery schedule, which is all-important in today's market.

In brief, Agfoods has made it possible for its members to:

1. Reduce forward inventory costs by making it possible for each member to consolidate several inventories into only one.

2. Reduce forward shipping costs by consolidating several small lot orders into full truckloads. In doing this, the members are able to enjoy the more economical truckload rate even on 2,500-pound minimum shipments.

3. Provide improved customer service by more frequent deliveries on a guaranteed shipping schedule.

4. Make easy entry into new markets without expensive and uncertain inventory supply considerations.

5. Assure inventory coverage for marketing promotional programs.

The success of this cooperative joint distribution program has been due to many different factors-all of which can be related directly to both the economic and the marketing advantages that the members have gained from working together.

Implications of Warehousing and Distribution Changes

As mentioned, a number of developments and changes in transportation will affect cooperatives in the near future. There are problems and changes in the other phases of physical distribution that will have implications to cooperatives. Among these are the following:

1. Changes in customers' buying habits are continuing to be brought about by a tighter competitive situation, higher cost inventories, and higher cost money (interest rates) to finance these inventories.

Today's new market climate is one of rapidly changing demands, particularly in the food service field. The strong trend toward reduced inventory investment is being achieved through increased inventory rotations. For programs of this nature to succeed and to avoid "stock outs" (lack of stocks) they must be supported by shorter lead times and more reliable delivery schedules.

2. Providing shorter lead times with dependable delivery schedules may become increasingly more difficult. The future in transportation holds many uncertainties, such as the energy crisis, railroads in bankruptcy, rail line abandonments, and the question of regulation versus deregulation.

Only those who are planning ahead and are able to establish distribution facilities (some with packaging capabilities) near their markets will be able to provide the faster, more reliable delivery schedules required to take advantage of this new market climate.

CENEX distribution center at Inver Grove Heights, Minn., features a Wide Area Telephone Service (WATS) operator and a computer for instant data on available supplies, control panel for a high-rise stacker crane system that can retrieve merchandise on command from a card, and a high-rise lift truck (top picture next page) from which an employee picks merchandise for a local cooperative.

The warehouse below illustrates an advanced concept in forward distribution centers. It is owned by Ag Foods, Inc., an interregional coordinated venture of eight cooperatives.

3. The availability of data communications networks will allow for faster order processing, shipping, billing and inventory updating by cooperatives.

Recently, data communications have been catching up with data processing. New companies have established coast-to-coast communications networks that allow customers to tie in and send orders directly into the system from- any point in the United States. This means that small companies can compete for business on a nationwide basis along with their larger competitors who have established their own proprietary communications network.

The services offered include administrative message switching, data entry, inquiry/ response, interactive time sharing, remote job entry, and so on.

To make it easier, the communications networks provide technical assistance in working out the most advantageous applications and also in tying in the clients' equipment with the national system.

The cost for this service is frequently independent of distance and will range from $2 to $3 (only a fraction of the average proprietary system cost) per terminal hour for interactive applications to and from any city on the network.

Information can be transmitted on these networks at flow rates conforming with almost any equipment mode. Customers are provided with a complete cost breakdown of their usage and are charged only for time when data is actually being delivered.

We expect to see a strong trend toward use of the latest in data communication techniques and equipment.

Planning For the Future

In the decade ahead, as labor and handling costs continue to increase and cooperatives become larger through internal growth and merger, physical distribution management will become more important in improving both efficiency and service. An analysis of cooperatives' distribution systems most likely will indicate various opportunities for future improvement. Some of the steps or points to consider in making such an analysis are:

1. Examine future trends and objectives of the cooperative.

This should be an all-inclusive effort with consideration given to new markets, new products, new packaging and delivery systems, as well as to the more traditional items of transportation, warehousing, and materials handling. Also review the objectives

as well as current opportunities of the cooperative as indicated by the trends that may be ahead.

2. Identify the relationships that exist within the total system and examine the possible tradeoffs.

It is important to look closely at each of the different activity areas, and to determine the relationship of each operation to all of the other operations, particularly at the points where they interface. The purpose is to look for opportunities where one activity area may help to improve the efficiency of another. An example might be the use of a new package in the processing operation that may increase the manufacturing cost by 1 cent a pound but save 2 cents a pound in warehousing, handling, and transportation costs.

Examine the possibilities of doing something differently or more efficiently such as: (a) Different methods of operating; (b) contracting out some of the activities; or (c) leasing vs. owning equipment.

3. Obtain and analyze complete cost information.

Only by having a full cost accounting of each of the activities relating to distribution is it possible to accurately measure the effect of any effort to improve the operation. *Total cost* is, in the final analysis, the only real measurement, because it may be necessary to increase the costs of an individual operation, or even an area, to make it possible to effect savings in other areas, which in turn can reduce the *total cost.*

4. Establish an information system that can accurately measure customer service.

This would include order processing time, shipping time, percent of service (the number of items available, and when and where needed as measured against the "out of stock" items), and the number of claims for damages, misshipments, shortages, etc.

5. Establish productivity measurements to evaluate the effective operation of each activity area. Use data processing information, where feasible, for problem solving.

Productivity is the key to the successful operation of a plant, warehouse or item of transportation equipment. If the transportation equipment is not being productively utilized then management may wish to explore whether the activity can be performed more efficiently by using for-hire carriers.

6. Look for opportunities to work together.

As in transportation, there are some compelling reasons to look for areas where cooperatives can work together-the most

important is to improve service. This is particularly true where it may enable cooperatives to provide more frequent deliveries because this will help to reduce their own inventory expense as well as that of their customers. Another compelling reason for working together is to reduce costs that can be reflected in greater returns to members or in lower supply prices, to them, or both.

A recent study indicates that many cooperatives should consider coordinated activities in making future plans. This study covered 34 cooperatives processors in 12 States who are shipping a total of 4.5 billion pounds annually. Findings showed that the large shipping volume, along with the national distribution pattern and steady flow, makes it possible for many of these cooperatives to join in coordinated transportation and distribution programs to reduce transportation, warehousing, and handling costs and improve service to customers.

As a result of this study, a series of feasibility studies is underway involving groups of cooperative fruit and vegetable processors who share a common need or problem and wish to improve service and reduce costs through the following coordinated programs:

1. Combining shipments of processed fruits and vegetables in the producing areas to obtain lower costs and volume rates for movement to market.

2. Joint warehousing in both the producing and market areas.

3. Joint acquisition of packing, packaging, and handling supplies.

4. Moving products in bulk from the producing areas and jointly packing, packaging, and labeling in the market areas.

Indications are that some of these cooperative joint ventures will offer savings of several million dollars to those joining in these programs.

While this study centered on fruit and vegetable processors, the same principles apply to the distribution operations of all cooperatives.

Physical distribution is an important phase of the overall operation and management of cooperatives. As cooperatives became larger, more diversified, and more vertically integrated, it will become even more important in providing better services and maximum benefits to members in the years ahead.

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