Developments in Unitized Handling in Food Distribution

by
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The author outlines developments in unitized handling and its relation to productivity in the food industry.

Since the beginning, when man discovered he had two hands and apples were available, there has been an interest in unitized handling or the aggregate handling of more than one distinct item. The unit has changed appreciably since the turn of the century. While progress is being made to improve the efficiency of product handling, in many cases, facility limitations restrict implementation of efficiencies. Unloading efficiency is hampered by lack of a truck-level unloading dock at fruit and vegetable wholesale warehouses. One of the problems we face as researchers to improve the efficiency of food distribution, is to implement improved efficiency after new facilities are provided.

We have seen a rapid transition from individual case handling to unitized handling with pallets. With the shift to unitized handling with pallets in food distribution has been the development of warehouses with higher stacking heights, accompanied by tremendous capital investments in pallet rack steel, pallets, and forklift equipment. Rapid adoption of pallets occurred during the later 1940's and throughout the 1950's. As labor costs continued to rise, additional methods of unitization were developed to offset the increased labor costs.

One area that has received considerable research attention was methods for unitizing shipments from warehouse to retail store. Labor costs became prohibitive for loading grocery orders case by case. One of the first systems tried, and used extensively, was the use of pallets with double length palletjacks for order assembly, truck loading and unloading. While the pallet system worked well for shipments within one company, such as a corporate chain, wholesalers servicing retailers lacked the ability to check the orders because cases were hidden in the pallet block when the pallet system is used. It is also difficult to unload pallets at the store when trailer-level docks were not available and retailers had difficulty in stocking shelves from pallets during customer shopping hours because the pallets blocked the aisles. In addition, trailer capacity is reduced with space taken by pallets and the pallet weight.

To overcome some of the problems with pallet shipping, someone developed a plywood sheet for order assembly with a double length palletjack and rollers on the deck of the palletjack for loading. This system, together with the multi-fork system described in our Marketing Research Report No. 473 permitted unitized loading, but cases still had to be unloaded one at a time at the retail store.

The most recent development in shipping merchandise from warehouse to retail store is the cart system. The carts are used for order assembly with a tractor-train and loaded in the trailer three abreast. At the retail store the carts are unloaded with either power tail gates or rolled directly into the store and are used for shelf stocking. The carts are generally 30 to 32 inches wide and do not block store aisles as much as pallets. A complete analysis of pallet-cost shipping systems is given in ARS 52-69 "Cost of

Handling Groceries From Warehouse to Retail Sales Floor With Warehouse Pallets and Mobile Carts". Another study has been completed and is in the process of publication on comparing costs for various methods including pallets and carts for shipping produce from warehouse to retail store. The problem of unitization from warehouse to retail store is complicated by the 6,000 to 8,000 items that must be handled, the multitude of case sizes, and the inability at present to unitize these multiple case sizes mechanically.

Research and development work in the unitization of wholesale-retail shipments has been limited by complexity of the problem and the limited resources available. Not only is the problem one of the number of items handled but also is compounded by variation in size and volume of retail outlets in developing the proper number of units in the case.

Development is underway in the development of automatic palletizers and depalletizers that can handle different size cases, although an adjustment must be made each time unit loads of a different size case is being palletized or depalletized. This development is being forced by the need to feed the SI Ordermatic and to unitize the products when assembled from the Ordermatic for shipment to stores. We will probably see our first break through on automatic depalletizers for feeding the SI Ordermatic.

Since the early 1960's considerable research and development activity has occurred in the area of shipment from manufacturer or packer to the wholesale warehouse. One of the first developments was the shipment of palletized merchandise with General Foods Corporation making the first breakthrough. General Foods leased a fleet of boxcars that included pallets as a part of the car. Because of the more rapid turn-around of cars, General Foods controlled the scheduling. Cars were returned empty to the General Foods Distribution Plant and considerable savings were generated over conventional handling.

Along with the development of the palletized shipping program, under the sponsorship of the Grocery Manufacturers of America and other wholesale and retail trade associations, specifications for an industry pallet were developed. The specifications included size, which is 48- by 40-inch, 4-way, hardwood, tolerances, etc.

Problems continue to be encountered on palletized shipping programs because the quality of pallets shipped, in many instances, is not comparable with the quality of pallets returned. An organization called the "Grocery Pallet Council" has been established to "represent all companies in the grocery industry who use, or have an interest in using quality pallets ---- and also to improve the industry's pallet interchange program". Even though problems exist with the palletized shipping program, labor requirements are reduced both in loading and unloading the car, and more rapid car turn around is achieved.

In addition to palletization, slipsheets are being used extensively to move product from packer to processor to manufacturer. The shipsheets are corrugated cardboard and are handled with a forklift that has a push-pull attachment for pulling the unit load onto the forklift and for pushing the unit load into place in the car. At the wholesale warehouse, the slipsheet and unit load is placed on a pallet and handled in the warehouse the same as any palletized load.

On Tuesday, John Morrissey told us about the unit train and the potentials for it. In addition to the unit train, a recent development has been the bulk hopper car for shipment of perishable agricultural commodities. Shipping tests have been made with the bulk hopper car for shipping 180,000 pounds of bulk potatoes and citrus with very satisfactory results. The system eliminates the cost of shipping master cartons and most of the labor associated with loading and unloading. The system works very well with tremendous cost savings but it does require the services of a terminal packer for grading and packing the commodity. Most wholesale receivers

are not equipped to handle 180,000 pounds of a particular commodity.

Extensive use is being made in the field of containerization with the trailer on flatcar. This system, while used extensively a few years ago for fresh meat shipments, is currently not being used as extensively because of the rail rate structure. Containerization is used extensively for overseas shipment of agricultural products. Containers are brought to the marshalling yards for loading on ships with large cranes. With self-contained refrigeration, researchers are reporting excellent results on agricultural containerized shipments. More details will be given later today on research results with containerized shipments.

We can expect substantial developments in the field of unitization with the passage of time. Accompanying developments in unitization will be the requirement of more capital--food marketing is and will become a more capital intensive industry.