

Refrigerated Locker Plants

preliminary survey indicates operations can be improved by application of industrial engineering techniques

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The following report is based upon a survey undertaken at the request of the Division of Food Technology, University of California College of Agriculture.

Refrigerated locker plant operations can be improved by simplifying and standardizing existing processing and merchandising methods.

A preliminary survey was made in three locker plants representing city, town and rural areas, to ascertain how industrial engineering techniques might be applied to improve operations.

For each survey a plant layout, a process chart showing each step of the operation, and a complete description of clerical procedures used were obtained.

There was little uniformity among the plants as to procedures and methods used in processing and merchandising. As some plants complete their operations more quickly, simply and cheaply than others, the possibilities of standardization and improvement in some of the methods employed should be studied.

The clerical operations associated with merchandising and processing showed the greatest amount of variability. There seemed to be a direct relationship between the amount of clerical work done per unit of product processed and the distance from an urban center. This quantity of clerical work—which is largest in the locker plants in the city—may be related to the price of locker rentals.

The operations of wrapping and packaging of meat, and identifying the packages, vary greatly. The paper products used range from double wrapping with a sheet of cellophane and one of wax paper to a single sheet of waxed paper. Wrapping techniques vary from a drug store wrap to double wrapping the corners.

Many sealing methods are used, from a single piece of tape to taping the four sides of the package. Also there is a large variation in the operation of identifying the packages going from preprinted tape for meat and number stamp for customer to marking all information by hand.

The general procedure for receiving incoming meat is highly variable and not efficiently performed. This is due mostly to poor planning of the storage operation and to poor layout of the storage or aging box, as well as to poorly conceived clerical operations involved in the receipt and inventory of incoming meat.

Clean-up operations at the end of the day are generally in need of improvement and standardization. These operations take 10% to 12% of the working time of one or more people in the processing department.

The meat cutting operation in the plants studied was performed differently in each plant. Variation may be required by the condition of the meat but methods could be devised to eliminate inefficiency and speed up the operation.

The ratio of nonproductive to productive personnel was high. Nonproductive personnel—those not associated with processing operations—ranged from 40% to 75% of the plant personnel.

A uniform procedure—both simple and comprehensive—should be developed for the clerical system. This would include designing the necessary forms, tags and books. For example, a properly designed tag containing cutting instructions attached to the meat while in

storage would provide the necessary information for the butcher, eliminating the need for the use of books and records. The procedures to be developed should be flexible enough to permit their use in small and large plants, and would be best developed on an industry-wide basis.

The wrapping and packaging operation, being most like the industrial assembly type operation, probably can be improved and standardized most easily. Along with simplifying the methods, the materials—such as paper—needed to insure proper meat storage should be investigated. The workplace layout, auxiliary equipment, tools and method can be developed so that they would be universally applicable.

The procedure for receipt and inventory of incoming meat will in part be improved by a simplified clerical system. The improvements through effective layout will not be available to existing plants, but layout plans can be useful in designing new plants and remodeling existing ones.

Clean-up and meat-cutting operations can be improved by the design of proper methods and by the study and redesign of the layout of the processing department. The layout of the processing department should be studied from the viewpoint of the processing and clean-up operations. Along with this investigation a study of auxiliary equipment used in processing should be undertaken.

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of storage. The conditions of planting for southern-grown plants in the mid-western and eastern states are normally less rigorous, but sucrose treatment of these transplants may nevertheless be beneficial.

The use of sulfanilamide or other fungicides was not investigated in these preliminary studies. When plants are grown for immediate use, the inclusion of a fungistatic material probably is un-

necessary. When storage is involved, mold is sometimes encountered and the inclusion of some suitable fungicide may be needed.

The best mode of sucrose application remains to be determined. The one used—three daily sprays just before pulling—was entirely arbitrary. It seems possible that increased period of time from initiation of treatment to pulling might permit greater sugar absorption.

Although tomatoes were the subject of this experiment, there seems to be no reason why the use of sucrose on other

transplanted crops and on many ornamental plants would not be possible. Sucrose sprays on a small scale on commercially grown pepper and tomato plants in southern California have been used for the past several years with reportedly favorable results.

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