ABSTRACT

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At present the acreage of lychee and longan have extremely been expanded in the northern part of Thailand. Whereas the scattered canning factories for lychee and longan were totally 24 places. The investigation of optimal locations and sizes of those factories and the exploration of which factories should be expanded or increased would lead to the improvement of production and marketing efficiency as well as the advantages over competitors. The main purpose of this study was to examine the optimum locations and sizes of canning factories for lychee and longan in the North of Thailand. Linear programming model was used to analyze their locations and sizes optimality based on the data collected in the year 2000.

The result of the base model, considered only the current factories which had limitation on either maximum or minimum processing capacity, revealed that the locations and sizes of the current lychee and longan canning factories were considerably optimum. The high potential canning factories were A10, A12, A15 and A24 located in Amphoe Mae Rim, San Sai, and San Pa Tong, Chiang Mai Province and Amphoe Muang, Lampang Province respectively. However,

when there were use sensitivity analysis, found that the model was sensitive to the change of transportation and processing costs.

As the case of factories with only limitation on their maximum processing capacity, the optimum locations were decreased to 4 locations and they were the same set of potential factories afore mentioned in the basic model analyzed. When the demand for lychee and longan increased by 5 and 10%, there was one more factories in addition to the base model, the A22 located in Amphoe Muang, Lampoon Province. As the factories with only limitation on their minimum processing capacities as well as the case of without limitations on their maximum or minimum processing capacities it was found that the optimal number locations were less than the base model. The A10 which was located in Amphoe Mae Rim, would not be existed. Considering on the minimum total cost of each model, the termination of current factories and to be left only the potential ones, the industry would earned only 8-20 million baht. The cost saving was not clearly defined when compared to the increasing monopolistic power that might be prevailed by a large number of factories had been decreased. Moreover, the analysis indicated that new 7 possible factories to be established in major production areas under the condition of the current factories operating not exceeding their maximum processing capacity should not be established. This finding was also tree in the case of 5 and 10% increasing the demand of canned lychee and longan. Similarly, they should not be existed when the current factories operated without limitations on their maximum and minimum processing capacity.

In conclusions, the locations and sizes of the current lychee and longan processing factories were considerably optimum. In the near future, new factories should not be established though there would be as much as 10% increasing in demand for the canned lychee and longan.