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Analysis of Current Practices of Litchi Drying in Small Scale Industries in Northern Thailand

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Abstract

Among the top litchi (*Litchi chinensis*) producing nations is Thailand, where litchi revenues are significant for local economies as well as the national economy on the global stage. Growers there are mostly small holders in the North, where marketing is almost exclusively under the control of middlemen and processors. Litchi is a highly perishable and seasonal crop requiring post-harvest preservation. It is generally sold fresh, with canning as the most common preservation method.

Drying is a practical conservation technique only recently applied to litchi in Thailand, where both wood- and petrol-fuelled cabinet dryers are used. Unsaturated markets for dried litchi offer great opportunity for expansion, but lack of appropriate knowledge hinders development. So far, current operations have not been optimised concerning performance, product quality and consumer acceptance.

This study proposes guidelines for the optimisation of the current litchi drying systems via inventory and comparative analysis of drying facilities in the greater Chiang Mai area. Semi-structured questionnaires were applied to investigate the procedures, equipment, and scale of facilities. Monitoring of the processing procedures and drying conditions, including temperature, relative humidity, air pressure, air velocity, and energy consumption provided a technical performance evaluation of the facilities. Analysis of final product samples, including colour, moisture content, water activity, pigments, vitamin C and sugar content provided quantitative quality measurements. A sensory evaluation was also applied to assess consumer acceptance of the products. The retrieved information, organised in a database, allows for the characterisation of the litchi drying sector in northern Thailand. The guidelines for optimisation were obtained by correlating the documented drying procedures with the final product's physical, chemical and sensorial attributes.

Keywords: Dried product quality, drying system optimisation, fruit drying, moisture content, sensorial evaluation