

ABSTRACT

TITLE : THE DESIGN AND DEVELOPMENT OF BAMBOO-BAKING OVENS APPROPRIATE FOR HANDICRAFT

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This is a research in the style of research and development with 3 objectives: 1) to investigate the data about the methods of bamboo-baking in Thailand, both smoke-baking and steam-baking with the use of herbs, in order to examine the advantages and disadvantages of each method, 2) to experiment with the development of the forms of ovens and baking procedures that can prevent weevils and other insects, 3) To analyze the experiment result and publicize the research report to bamboo handicraft manufacturers. The researcher conducted fieldwork by collecting data on the current situation and problems in bamboo-baking in 10 provinces, namely, Kanchanaburi, Prachinburi, Nakornnayok, Nong Bua Lamphu, Ubon Ratchathani, Lei, Nakornpanom, Mukdaharn, Kalasin, and Yasothorn and studied relevant documents and researches. The methods found were categorized into 2 types and the case studies divided into different cases. These are smoke baking for wickerwork with 9 different case studies and smoke baking for furniture with 6 different case studies. Also investigated were the methods for preventing weevils and other insects as well as other 5 case studies of the usage of ovens in other baking works expected to be beneficial for the development of smoke ovens. Then the data were analyzed to find out about the forms of ovens and quality of each type of baking in order to compare the baking quality of the different types. The summary is divided into 5 main topics: materials for smoke oven construction, construction procedures, oven design, smoke baking procedures, and the benefits of using smoke ovens. After the summary was derived, a brainstorm was arranged with 12 participators consisting of entrepreneurs and those who are concerned. A conclusion can be drawn into 3 main topics as follows. 1) On fuel for burning, the focus should be on economical burning. The materials used as fuel should be those available in the local area and waste materials. The burning procedures and fuel materials must not be the cause of hazard or pollution for users

and others in the vicinity. 2) On the forms of smoke ovens, they should be of the size that can contain a bamboo of at least 2 meters and there should be the openings for loading bamboos, openings for feeding fuel and openings for ventilating smoke. 3) On the materials for the oven construction, they should be those available in the local area with usage durability and, importantly, economical. All the data from the study were used in the determination of the basic requirements for the experiment of designing and creating 4 model ovens. The fourth is the one that has been proved to be suitable for using in the manufacturing processes of bamboo handicraft, both wickerwork and furniture. In the experiment of preventing destruction by weevils and other insects, it was found that during 6 months, no traces of biting were found, which corresponds to the determined standard. Moreover, the oven has been used in 2 enterprises – Mr. Lurlak Boon-ake's enterprise group of the Tachang community in Tachang sub-district, Sawang Weerawong district, Ubon Ratchathani, and Mr. Somyod Kamwaeboon's enterprise group of the Paingam community in Dong Yang sub-district, Mahachanachai district, Yasothon. These are the manufacturers of bamboo handicraft and home decorating items.