CHAPTER I

INTRODUCTION

1.1 Statement of Problem

Agricultural products are vital to Thailand both as export commidity and for domestric consumption. In the rural areas of Thailand, drying of agricultural products under the sun is employed extensively to reduce their moisture content down to acceptable level for storage. Thus a string of cloudy days might cause quality deterioration due to mould infection. Agricultural products that have been subjected to drying are in a state of preservation primarity because of their low moisture content. It is well known that such microorganisms as mold and bacteria which are the usual cause of spoilage, as well as enzymes that are screted by them or are inherent in the food, cannot carry on their usual activities if the water content of the food is sufficiently low. Such microbial activities, which eventually result in more or less advanced decomposition, are inhibited unless water is restared to the materials or until moisture has been reabsorbed to a sufficient extent. Furthermore, the microbes themselves lose water during drying and are rendered inert. Since not all of the microorganisms are killed, however, they can possibly remain dormant for a long period of time. Upon subsequent establisment of higher moisture conditions, spoilage might result in a short time.

Many researchers have studied drying of agricultural products (Refer to Chapter II). However, published information on the drying characteristics of common Thai agricultural products are still lacking.

1.2 Purpose of Research

The main objective of this research is to investigate the drying characteristics of various Thai agricultural products in a through-flow drying process, i.e. to assess the effects of hot air flow rate and hot air temperature on the drying rate. The obtained data would be useful to the design of similar through flow dryers and to classify the agricultural products according to their drying characteristic.

1.3 Scope of Research

The scope of the present study are as follows:

a. Carry out a literature survey on drying of agricultural products.

b. Design and construct a bench-scale through flow dryer for use in the experiments.

c. Determine the effects of hot air flow rate and hot air temperature on the drying rate of some Thai agricultural products.

d. Classify the agricultural products studied according to their drying characteristics.

e. Making use of experimental data, carry out design calculations of a through-flow dryer.