

# CHAPTER 1

## INTRODUCTION

### 1.1 Background

Daw-cultivar longan (*Dimocarpus longan* Lour.) is one of the important economic fruits of Thailand. Longan fruits can quickly develop fruit-rot disease when being kept at the ambient room temperature. Its post-harvest rot disease is a significant problem causing damages to fruit every production year (Chaiwangsri, 1992). Its shelf-life is comparatively, Tongdee (1977) reported that 66 % of the fruits would rot within 4 days at ambient temperature (Tongdee, 1997). Different methods have been developed to slow down the fruit rot including fumigation fruits with sulfur dioxide (SO<sub>2</sub>). However, the accumulation of SO<sub>2</sub> and sulfite-residue were found in the peels and arils of longan fruits in the production from northern Thailand which represents health risk for susceptible people with allergies (Udomchote, 1994; Taylor, 1993). Up until now, there is no practical way to eliminate these toxic and unacceptable substances. Healthy looking longan fruits on the tree appear normal, but after harvesting, they become quickly rot in a few days. Ultra-structure of the peel of longan fruit after harvest is not yet well documented. Srikum (1970) investigated the anatomical structure of longan flower and fruit during its development; however the study made no mention of the fruit pericarp. In 1997 Supawattanabodee (1997) studied the morphological and anatomical structure of the fruit infected with witches' broom disease under a light-microscope. The study had proposed an interesting structure of longan pericarp (Supawattanabodee, 1997). By understanding

the anatomical structure of longan peel and the pathogenicity of the causative agents, a more effective way to control and eradicate the fruit rot disease may be achieved.

The main objective of the present research was to study the change of pericarp and stem-end of longan fruit after being harvested. The development of diseases on the fruit pericarp was observed and monitored adopting light-microscopy and electron microscopy techniques. The detail information of factor(s) causing the rapid spreading of rot disease in post-harvested longan fruits was investigated the obtained information could be used for the development of the disease controlling method eventually.

## 1.2 Research objectives

1. To study surface appearance of harvested Daw-cultivar longan fruits.
2. To study ingress, internal spread and disease development of the fruit rot pathogenic fungi in harvested Daw-cultivar longan fruits.
3. To study the effect of SO<sub>2</sub>-fumigation on disease development of harvested Daw-cultivar longan fruit.