

## CHAPTER 1

### INTRODUCTION

Longan is one of the most important fruit crops in Thailand, with 712,000 tons of production from about 156,640 ha in 2005. The production area in Thailand is confined mainly to the northern area where the cold season is cool. The main plantings are in Chiang Mai, Lamphun, Chiang Rai, Lampang, Payao, Nan and Chantaburi provinces (Office of Agricultural Economic, 2007). Although there are many commercial cultivars in Thailand but the most popular cultivar is "Daw". Its planted more than 73% of the whole planting areas especially in Chiang Mai and Lamphun. Longan is one of the top export earners for Thailand with a value of US\$ 202 million in 2000. About 50% the of productions are exported as fresh, dried, frozen or canned fruits mainly to Hong Kong, Singapore, Malaysia and the Philippines. Exports of dried fruits are increasing every year and exceeding the volume of canned products. However, frozen longan fruit comprises only a small section of the market (Subhadrabandhu and Yapwattanaphun, 2000 a).

In the past, the main problem of longan production was alternate bearing, due to its genotype and climatic conditions. The longan is classified as an alternate bearing fruit tree and highly dependent on climatic conditions because longan flower initiation requires low temperature about 15 to 20 °C for 1 to 2 weeks. So, the yield of longans varied from season to season. Longan growers and horticulturists used to search for a method to solve this problem. In 1998, they found that potassium chlorate could induce longan flowering all year round. Since then, longan growers apply chlorate compounds such as hypochlorite, chlorine solution and potassium chlorate to induce flowering of longan. Potassium chlorate ( $KClO_3$ ) is the most popular due to its effectiveness and less toxicity.

There were many studies about  $KClO_3$  applications but the changes of isozymes and proteins in the plants after treated with  $KClO_3$  are still unclear.

### **Objectives of the experiments**

The objectives were to study the effect of leaves on flower induction in potassium chlorate treated trees and the effects of potassium chlorate on some isozymes changes as well as protein changes in the leaves of those trees.

### **Implementations**

1. The results of this research could be applied for relevant studies in other economic fruits.
2. Basic information gathered from this study could lead to further studied concerning flowering process induced by potassium chlorate.