

## Deterioration Model for the Assessment of Longan Senescence and Decay

Sarana Sommano<sup>1,2\*</sup>, Pilailuck Ittipunya<sup>3</sup> and Pittaya Sruamsiri<sup>2</sup>

<sup>1</sup>The uplands program, University of Hohenheim(Thailand Office), Faculty of Agriculture, Chiang Mai University, Chiang Mai 50200, Thailand

<sup>2</sup>Department of Horticulture, Faculty of Agriculture, Chiang Mai University, Chiang Mai 50200, Thailand

<sup>3</sup>Department of Food Science and Technology, Faculty of Agro-Industry, Chiang Mai University, Chiang Mai 50100, Thailand

\*Corresponding author. E-mail: [ssomano@yahoo.com](mailto:ssomano@yahoo.com)

### ABSTRACT

*The correlation of browning index (BI) to decay parameters was determined using total soluble solid content (TSS), ethanol and ethanol/TSS ratio. Longan fruits were harvested traditionally and compared with precooling technique. It was found that longan fruit, harvested without cooling, exhibited better colour retention, and less off-flavour production. All parameters except TSS gave a good correlation with storage time. The relations of BI to ethanol and ethanol/TSS were also observed and high regression coefficients were also found ( $R^2 > 0.80$ ). The data all fitted well with linear regressions, thus giving the model to predict storage time of the longan fruit after harvest as:  $(D = 2.14x - 0.6, R^2 = 0.75)$  where  $x = BI \times (E/T)$ .*

**Key words:** Post harvest decay, Longan, Deterioration model, Maturity index, Ethanol content and browning index

### INTRODUCTION

Longan (*Dimocarpus longan* Lour.) is a fruit of the family *Sapindaceae*. It is considered to be nonclimateric as the fruit cannot ripe off the tree (Jiang et al., 2002; Huang et al., 2005). The fruit is harvested on the basis of eating quality: a particular shape, skin colour and flavour of each cultivar (Fletcher, 1995; Su et al., 2005). Jiang et al., (2002) reported that the respiration rate and ethylene content increased after the fruit has been harvested which were associated with temperature, desiccation and the decay caused by micro-organism. After longan fruit is harvested, it can be stored for a few days at 30°C (Tongdee, 1997) and 30 days at 1-5°C (Tian et al., 2002). It then gives brown colour at the pericarp and signs of senescence, e.g., decrease in sugar content and increase in ethanol (Jiang et al., 2002).