

## ABSTRACT

### **THE CHEMICAL, PHYSICAL, AND SHELF LIFE CHANGES OF RED CHILI PEPPER (*Capsicum annum var. longum*) DURING DYNAMIC STORAGE OF AIR-CO<sub>2</sub>**

By

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Red chili pepper (*Capsicum annum var. Longum*) is one of the important vegetables which has high economic value. Red chili pepper is easily damaged, shrinks, and rapidly decays. The damage is triggered by the process of respiration. Decreasing the respiration rate during storage can affect its shelf life. Dynamic storage of air-CO<sub>2</sub> is supposed to be a good way to extend the shelf life of red chili pepper to which keeps it in fresh and good conditions.

The aims of this research were to study the effect of storage temperatures and variation in gas compositions (air-CO<sub>2</sub>) to the changes of total soluble solid, total acid, and shelf life of red chili pepper. This research is expected to provide information about the red chili peppers postharvest handling by using dynamic storage of air-CO<sub>2</sub>, and to give basic information in developing the research in the dynamic storage of air-CO<sub>2</sub>.

The gas compositions used in this research were: A (O<sub>2</sub> 5%:CO<sub>2</sub> 5%), B (O<sub>2</sub> 10%:CO<sub>2</sub> 5%), C (O<sub>2</sub> 5%:CO<sub>2</sub> 10%), and D (O<sub>2</sub> 10%:CO<sub>2</sub> 10%) with two levels storage temperatures (29-32°C and 10°C). The parameters measured were respiration rate, total soluble solid (TSS), total acid, and shelf life. Those parameters were measured periodically once in two days until the samples reached senescence.

The results showed that the combination of dynamic storage of air-CO<sub>2</sub> with storage temperature of 10°C reduced the chili peppers' respiration rate. Consequently, the chili shelf life increased reaching about 32-38 days, three times the shelf life of chili kept in the room temperature (29-32°C). The TSS of chili stored in cold temperature (10°C) was relatively stable compared to the TSS stored in room temperature (29-32°C) which was likely to decline. Total acid of chili stored at 10°C decreased gradually and at 29-32°C the total acid dropped rapidly. The control (chili stored without dynamic gas compositions) in both storage temperatures seemed to have TSS much higher than the chili stored in the

dynamic gas compositions but it fluctuated during storage. Additionally, the total acid of the control decreased very quickly.

Key words: red chili pepper, dynamic storage of air- CO<sub>2</sub>, respiration, total soluble solid, total acid, shelf life.