INFLUENCE OF ACOUSTIC WAVES ON THE SHELF LIFE QUALITY OF CARROT (*Daucus carota* L.)

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ACCEPTANCE SHEET

This undergraduate thesis entitled **"INFLUENCE OF ACOUSTIC WAVES ON THE SHELF LIFE QUALITY OF CARROT (*Daucus carota* L.)"**, prepared and submitted by **PAULO GABRIEL R. BERNARDO,** in partial fulfilment of the requirements for the degree of **BACHELOR OF SCIENCE IN AGRICULTURAL AND BIOSYSTEMS ENGINEERING (AGRICULTURAL AND BIO-PROCESS ENGINEERING)**, is hereby accepted:

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BIOGRAPHICAL SKETCH

The researcher, Paulo Gabriel Ramos Bernardo, was born on June 30, 1997 in Parañaque, Metro Manila. He is the second of three children of Liza Ramos and Abelardo Bernardo. He grew up in Sto. Domingo, Nueva Ecija.

The researcher finished both his elementary and secondary education at REH Montessori College in 2009 and 2014, respectively. He passed the entrance examination in Central Luzon State university on 2014. Because his family is not financially capable, CLSU was the only university that he planned on going since the tuition fee there was cheaper. When he enrolled for Agricultural Engineering, the researcher did not have an idea what he was putting myself into but as he went on he started falling in love with the course and realized that being an Agricultural engineer is an awesome job and one that can really help the country.

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ABSTRACT

BERNARDO, PAULO GABRIEL R. Department of Agricultural and Biosystems Engineering, College of Engineering, Central Luzon State University, Science City of Muñoz, Nueva Ecija, Philippines. **June 2019. INFLUENCE OF ACOUSTIC WAVES ON THE SHELF LIFE QUALITY OF CARROT (*Daucus carota* L.)**

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Carrot (*Daucus carota* L.) is considered a high value crop which requires application of post-harvest techniques to extend its shelf life. One of the new ways of extending the shelf life of fresh produce is acoustic wave. The purpose of this study was to test the effects of acoustic waves treatment in prolonging the shelf life quality of carrot.

The carrot samples were exposed to 1kHz, 100dB acoustic waves that was produced by a sound transducer inside a sound-proof chamber to prevent extraneous noise. After exposing to acoustic waves, carrots were stored in a refrigerator at 5 °C then monitored the surface color, flesh firmness, and the shelf life which are the quality indicators of carrot, were then monitored.

The study was laid out in Completely Randomized Design (CRD). Analysis of Variance was used to determine if there is a significant difference among the treatment and Least Significant Difference (LSD) test was used for the comparison among means.There were 4 treatments considered in this study, each having 3 replications. The treatments were varying hours of exposure time to acoustic waves (0 hour, 4 hours, 6 hours, and 8 hours).

The analysis of the results showed that treated carrot has a significant difference compared to the non-treated carrot. Carrots treated with acoustic waves exhibited gradual changes in its quality than of non-treated.

The results showed that 1 kHz, 100 dB for 8 hours is the most suitable hours of exposure to acoustic waves to extend the shell life quality of carrot in terms of surface color and flesh firmness. Carrot's shelf life has a potential to be extended to 28 days at 5 °C if treated with acoustic waves.

Keywords: acoustic waves; shelf life; flesh firmness; surface color

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