

Title Impact of ultraviolet energy on strawberry shelf life
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Abstract

Ultraviolet energy has been used in the past to disinfect drinking water and fruit juice. This paper will discuss the impact of ultraviolet energy on strawberry shelf life. The ultraviolet tunnel used in the study utilizes lamps that are designed to emit specific narrow wavelength spectrum, of 253.7 nanometers. The tunnel was made of polished aluminum and reflects beams of energy within the tunnel.

Ultraviolet energy can improve food safety by destroying the microorganisms, such as E coli and salmonella that cause food-borne illnesses. Ultraviolet energy can extend shelf life of produce and make it possible to keep these foods for greater periods of time while keeping the integrity of the berry intact.

A review of literature was conducted to identify the pathogens that affected this study, these pathogens were: Grey Mold, *Botrytis cinerea* ; Dry Crown Rot *Botryotinia fuckeliana* ; Phomopsis Leaf Blight, *Phomopsis obscurans* and *Dendrophoma obscurans* ; Rhizopus Rot (leak), *Rhizopus stolonifer* ; and Tan-brown rot, *Discohainesia oenotherae*.

It was found that ultraviolet viable application range rate were 88.1 mj/cm^3 , 140 mj/cm^3 , 191.9 mj/cm^3 , 243.8 mj/cm^3 , 295.7 mj/cm^3 and 347.6 mj/cm^3 lasted longest and these rates were used in the full test run. Results indicated that a significant shelf life extension of strawberries was achieved at each of these treatment levels. The average shelf life of non-treated berries was 14.9 days whereas the average treated strawberries range from 17.25 to 20.9 days. A lowest level of treatment was reached at 15 seconds or 88.1 mj/cm^3 .

A statistical relationship between application rates and shelf life was determined. Using an ANOVA table at 95% confidence interval, it was determined when all samples, as individuals, were considered that the shelf life was extended by exposure to ultraviolet energy. Another ANOVA table was used for each treatment group versus the control group, all treatment groups showed a significant difference opposed to the control group.

In conclusion, this study shows that applying ultraviolet energy to strawberries significantly improves shelf life. There was not a significant benefit to exposing the strawberries to added ultraviolet energy.