

Title Post-harvest hydrogen peroxide applications for lowbush blueberries (*Vaccinium angustifolium*)  
Author K.M. Crowe, A.A. Bushway and R.J. Bushway  
Citation Book of Abstracts, 2004 IFT (Institute of Food Technologists) Annual Meeting and Food Expo, 13-16 July 2004, Las Vegas, Nevada, USA. 321 pages.  
Keyword blueberry; hydrogen peroxide

### **Abstract**

Although good agricultural practices help alleviate potential food safety problems, much responsibility for fresh, high quality fruits and vegetables falls into the hands of processors. As consumer demand for safe produce escalates, the industry is being driven to identify sanitizers that deliver combined post-harvest approaches to food safety-reduce residual pesticides and improve microbial quality while also prolonging shelf-life. Previous studies have demonstrated the efficacy of 1% hydrogen peroxide in reducing microbial populations of lowbush blueberries. After producing population reductions greater than or equal to those observed on chlorine-treated blueberries, hydrogen peroxide is being considered as an alternative to chlorine treatment in blueberry processing. Our objective was to evaluate the efficacy of 1% and 2% hydrogen peroxide in residual phosmet and to confirm these promising microbial results. Treatments of 1% and 2% hydrogen peroxide and 100 ppm chlorine were applied using overhead spray systems similar to industrial processes. Contact times of 60 and 120 sec were evaluated based on attainability during processing. Microbial analysis was conducted according to FDA Standard Methods and phosmet residue analysis was performed using GC/MSD. Reductions up to 3 logs were obtained on hydrogen peroxide-treated blueberries. Microbial reductions were greater than or equal to those obtained with 100 ppm chlorine. Significant increases ( $p < 0.05$ ) in population reductions were not observed with an increase in contact time. Phosmet residue analysis revealed residues below EPA tolerance of 10 ppm on unwashed controls; however, treatment-mediated reductions were observed following both treatments with greater reductions obtained on hydrogen peroxide-treated samples. The combination effect of hydrogen peroxide was achieved without compromising blueberry color. Results indicate hydrogen peroxide sprays are an effective alternative to chlorine for blueberry processing. Furthermore, with current EPA regulations, applications of 1% hydrogen peroxide are exempt from requirement of a tolerance when applied post-harvest to agricultural food commodities. Treatment incorporation should take place without any necessary additions to blueberry processing facilities.