

## **Abstract**

Hazard Analysis Critical Control Point (HACCP) has been called the most systematic, cost-effective, science-based approach toward food safety management. It involves the identification, evaluation and control of potential hazards (i.e., microbiological, chemical or physical) that might contaminate food during its handling between the farm and the consumer. HACCP is based on two important concepts in safe food production: prevention and documentation. Today, HACCP plans are recommended or required for the food industry in the U.S. by both of the food regulatory agencies in the U.S. – the Food and Drug Administration (FDA) and the U.S. Department of Agriculture (USDA). HACCP has also achieved international acceptance with its recognition by the World Health Organization (WHO) as the most effective means for controlling foodborne disease.

Although not yet mandated by the FDA, HACCP for the fresh-cut produce industry presents some unique challenges because there is no definitive kill step for pathogens (e.g., retorting, pasteurization, and acidification) in the processing operation. Instead HACCP must incorporate a series of intervention steps or hurdles, such as using antimicrobial agents in flue wash water, applying modified atmosphere packaging techniques, and following consistent good sanitation and low temperature management practices to retard pathogen growth.

Due to the vulnerable nature of fresh-cut produce, it is imperative that the best process control techniques be utilized to promote safety. The majority of U.S. fresh-cut processors have voluntarily implemented HACCP programs, but these typically focus on qualitative issues rather than quantitative data. A HACCP program's effectiveness and reliability as a food safety control tool can be greatly enhanced by using statistical techniques, specifically statistical process control (SPC). SPC offers an objective, quantitative and scientifically valid means for determining process capability and for predicting CCP control during the monitoring and verification activities of a HACCP plan. The National Academy of Sciences recently recommended SPC as a means for food processors to achieve performance safety standards. They also recommended that such principles be incorporated into food safety regulations, thereby providing regulatory agencies with a tool to monitor compliance of these performance standards in the food industry. The objective of this presentation will be to discuss, with examples, ways to integrate SPC methodology into HACCP programs to enhance food safety in the fresh-cut produce industry.