

Infrared Dry-peeling Technology for Tomatoes Saves Energy

March 2011

Fact Sheet

The Issue

Chemical peeling with sodium hydroxide or potassium hydroxide is the standard method for peeling tomatoes and other canned fruits, such as peaches, pears, and apricots. The waste chemicals are neutralized and then discharged as wastewater. The high salinity of the wastewater from the peeling process has become a critical production issue to tomato and related processors.

Due to cost and environmental regulations, some tomato processors use steam peeling to reduce chemical contamination of water. Steam peeling produces undesirable products, such as deteriorated appearance, loss in firmness and lowered product yields. Steam peeling is also more energy intensive. Although various alternatives have been studied, no commercially feasible peeling methods have been developed.

Project Description

This research will use infrared heating technology for peeling tomatoes. Infrared dry-peeling, a device that uses electromagnetic radiation to peel tomatoes, shows promise in reducing energy consumption, producing less wastewater and preserving product quality. Infrared dry-peeling is expected to reduce the tomato peeling loss significantly and result in a firmer product as compared to chemical peeling. Reduced peeling loss and



Laboratory-scale infrared dry-peeling system
Photo credit: University of California, Davis

improved product quality would result in more valuable and premium products. Additionally, because no salts are used in the peeling process, the skins could be easily used as value-added food products.

PIER Program Objectives and Anticipated Benefits for California

The project's objectives are to:

- Develop a prototype infrared dry-peeling system for tomatoes.
- Test the efficiency of the new peeling system by evaluating various processing parameters, peeling performance, and product quality.

- Work with food processors and related organizations to transfer the new peeling technology into the marketplace.

The desirable technical and economic benefits that result from a successful project will include reduced chemical disposal, less water usage and waste disposal problems, shorter processing time, improved product quality, and lower energy costs.

Project Specifics

Grant Award: PIR-09-001

Recipient: University of California, Davis

City/County: Davis, Yolo County

Assembly District: 8

Senate District: 5

Application: Nationwide

Amount: \$324,250

Term: November 1, 2010 to December 31, 2013

Co-funding: \$84,000 from UC Davis

For more information, please contact:

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