

Helping Processors Improve Their Cut of the Produce Industry

The fresh-cut produce industry is relatively new, yet it's the fastest growing segment of the fresh produce industry, according to the International Fresh-Cut Produce Association (IFPA) based in Alexandria, Virginia.

That's not surprising. By reaching for precut, prepackaged fresh fruits and vegetables made available by the industry today, busy consumers can get both nutrition and convenience.

The fresh-cut produce industry involves growers, packers, food processors, package manufacturers, and distributors. In addition to consumers, buyers include restaurant, foodservice, and grocery professionals.

The Produce Quality and Safety Laboratory, or PQSL, is one of several ARS laboratories that work with produce. It is part of the Plant Sciences Institute of the Henry A. Wallace Beltsville (Maryland) Agricultural Research Center (BARC).

The laboratory has focused on processing and packaging technologies that improve the shelf stability, food safety, and consumer acceptability of fresh-cut produce. Since the industry's start about 20 years ago, its leaders have been attracted to opportunities to work with ARS. Such partnerships have been an important part of the research.

In April 2006, PQSL staff helped coordinate a new symposium at IFPA's 2006 annual conference, which was held in Baltimore, Maryland. At the symposium, "Government Resources To Support Your R&D Program," several ARS leaders spoke, including L. Frank Flora, national program leader for product quality and utilization; James Lindsay, national program leader for food safety; Harry D. Danforth, BARC technology transfer coordinator; and Wanda W. Collins, director, BARC Plant Sciences Institute. They provided information to industry members about a variety of government resources that are available.

In addition, during the conference, several industry members visited the Beltsville laboratory. They toured its state-of-the-art fruit-and-vegetable testing-and-sanitation research facility—which models today's industrial settings. This facility was designed and built by ARS researchers involved in developing and testing methods of keeping produce, both whole and cut, fresher longer.

These efforts can help the fresh-cut produce industry face a variety of challenges.

Whole fruits and vegetables are living organisms whose journey to either consumption or spoilage begins at harvest. Cutting the outer surface, or skin, of produce during processing exposes many more surfaces and accelerates the rate of respiration and therefore breakdown.

ARS researchers here are working on methods of prolonging quality and ensuring safety. For example, certain treatments that

involve either hot water or hot vapor have been found to help inhibit microbes on specific varieties.

Dips, coatings, and sanitizers are also in the works. Their optimum concentrations vary, depending on the commodity. Several such treatment solutions developed at PQSL provide both antibrowning and antimicrobial benefits. Some of these hold promise as the basis of a new generation of sanitizers.

"Packaging atmospheres" are also important.

Consumers don't usually think of their produce package wraps as being gas permeable. But because different fruit and vegetable varieties respire at different rates, the exact amount of oxygen they are exposed to influences their breakdown. Today's fresh-cut produce package wraps are complex and vary largely in their levels of oxygen and carbon dioxide permeation rate. By customizing this feature to a fruit or vegetable variety's individual requirements, scientists can help keep them fresh longer.

In the story on page 4, you'll read about PQSL lab results with food packaging systems that both allow the proper atmosphere and discourage microbial growth.

Developing new varieties of fruits and vegetables specially suited for use by the fresh-cut industry is also being emphasized. A variety that is ideal as a whole food may lack ripening and texture characteristics that are ideal in a precut food. PQSL staff also collaborated with industry to lead a symposium on that subject at the IFPA annual conference.

Asking processors and other industry members who attended to discuss their challenges revealed ways that the laboratory can better target future research efforts. How about orange-fleshed honeydew melons that look and taste as good as cantaloupes, but maintain the firmness and sweetness of traditional honeydews?

You'll read about some of PQSL's research on optimal varieties in this month's feature as well.

Current fresh-cut produce sales have been estimated at more than \$14 billion annually. This segment of the produce market has grown more than 10 percent each year from its start, and IFPA projects that it will continue this fast-paced growth during the next decades.

Research helps keep fresh-cut products fresh, nutritious, and safe, and makes them easier to pack, ship, and store. Continued advancements in these areas will lead to more and more consumers reaching for a slice of fresh-cut, ready-to-eat produce.

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