



Consumers are demanding more variety in their fruit and vegetable choices. So the apple

industry is providing an alternative to the more traditional varieties, like Red Delicious and Golden Delicious.

Consumers seem to be willing to pay more for exotic varieties like Fuji, an apple that originated in Japan in the early 1960's but has only recently caught the eye of consumers around the world.

Production of Fuji apples is rapidly expanding in Washington State. In 1992, Washington growers harvested about 805,000 boxes of Fujis. Only 3 years later, their production was up to nearly 3.5 million boxes. Compared to all other varieties, Fuji is experiencing the greatest amount of expansion and growth.

"Fuji is an excellent fresh-market apple. It's juicy and flavorful and retains its texture during ripening," says James P. Mattheis, an Agricul-

## Keeping Fuji Apples Fresh

tural Research Service plant physiologist based in Wenatchee, Washington. "However, we found it a challenge to maintain other aspects of the fruit's quality so as to extend the marketing period."

Studies at the Tree Fruit Research Laboratory have led to Fuji apples that can be stored for up to 9 months after harvest without significant losses in quality.

Mattheis conducted research during six production seasons. He found that several field and storage factors interact to determine how Fuji responds to controlled atmosphere (CA) storage. CA is a fruit industry technique to keep apples fresh longer. It involves modifying the concentration of gases naturally present in the air.

"Fuji apples should be harvested for long-term storage based on changes in their color,

firmness, starch, sugar, and acid content," says Mattheis. In addition, fruit should have no more than a slight watercore, which is the natural accumulation of a sugar solution in the apple's core.

Mattheis found that immature fruit have poor flavor and color, while overmature fruit are prone to decay and lose their flavor and texture. He says that the best treatment for Fuji apples is a CA in which carbon dioxide concentration is 1 percent or less (Fujis are sensitive to this gas) with 1 to 1-1/2 percent oxygen at 34°F.—By **Dennis Senft**, ARS.

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