

Irradiation preserves blueberry, grape quality

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Blueberries ready to enter the x-ray unit at the irradiation facility. Credit: Photo courtesy of Anuradha Prakash.

It is often necessary to treat produce for insects in order to transport crops out of quarantine areas. Fumigation with methyl bromide, one of the most common treatments, is in the process of being phased out because of its depleting effect on the ozone layer. Alternately, ionizing irradiation at low doses is being used worldwide as a promising phytosanitary treatment for fruit such as guava, rambutan, and mango. New research reveals that irradiation can also be effective for treating blueberries and grapes for export without compromising fruit quality.

'Star', 'Jewel', and 'Snowchaser' blueberries and 'Sugraone' and 'Crimson Seedless' grapes were irradiated at a target dose of 400 Gy (range of 400-590 Gy for blueberries and 400-500 Gy for grapes) and stored for 3 and 18 days under refrigeration, plus 3 days at ambient temperatures. "This experiment was designed to simulate the time of ground transport (from California) to Mexico and sea transport from California to Asia," the scientists explained. The fruit was then evaluated for soluble solids concentration, titratable acidity,

and weight loss. With respect to these quality attributes, the results showed differences among fruit varieties, but the researchers found treatment effects to be "not significant."

The study also involved sensory tests in which consumers evaluated the fruit on appearance, flavor, texture, and overall "liking." "Firmness was the primary attribute affected by [irradiation](#) for both varieties of grapes, but sensory testing showed that consumers did not have a preference for control or irradiated [fruit](#)," the authors said. "However, sensory scores for flavor were higher for the irradiated berries than the control berries after storage, suggesting a decline in quality of the control blueberries with time," the scientists noted.

The authors said the research showed that (in terms of quality) irradiation at 400 Gy can maintain blueberry and table grape quality sufficiently to meet transportation, distribution, and storage needs for overseas markets. "Our results show that both [blueberries](#) and grapes have a high tolerance for phytosanitary irradiation and that storage affects their quality more than irradiation treatment," they concluded.

More information: *ASHS HortScience*: hortsci.ashspublications.org/c.../50/11/1666.abstract

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