

Multistate Research Project S-294
Postharvest Quality and Safety in Fresh-cut Vegetables and Fruits

2007 Activities Report

Institution: The University of Arizona

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Introduction:

At The University of Arizona Yuma Agricultural Center research on fresh-cut vegetables continue to aim for more understanding in two main areas. The first is to study the impact of pre-harvest practices and weather events on post-processing quality of fresh-cut vegetables. Secondly, we have been interested in evaluating the overall effect of common sanitizers, applied in the field or during postharvest handling, on fresh cut quality, which included assessment of nutritional parameters.

Activities

Objective 3. *Improve understanding of biochemical, physiological and molecular mechanisms that affect fresh-cut product quality.* – We have examined effects of the last irrigation schedule, nitrogen fertilization and sunlight prevalent during the last week on quality parameters of intact and fresh-cut lettuce processed in lab and commercial settings. Also, we have evaluated the effect of sanitizing treatments on chemical/nutritional composition of fresh cuts.

Objective 5. *Evaluate and control unintentional and intentional microbial contamination of intact and fresh-cut produce.* We have examined the effect of pre-harvest practices and conditions such as irrigation water quality and subsequent intervention mechanisms on microbial population of the harvested product.

Bulleted brief synopsis of each major project underway in 2007-2008

- Evaluation of the effect of pre-harvest factors on the quality of fresh-cut leafy greens and melons.
- Studies to understand cumulative effect of combination treatments that cause stress to the plant/harvested product.

Publications:

Kim, H.J., Fonseca, J.M. Fonseca, Choi, J.H., Kubota, C. 2007. Effect of hydrogen peroxide on quality of fresh-cut tomato. *Journal of Food Science*. 72: S463-S467.

Kim, H.J., Fonseca, J.M., Choi, J.H., Kubota, C. 2007. Effect of methyl jasmonate on phenolic compounds and carotenoids of romaine lettuce (*Lactuca sativa* L.). *Journal of Agriculture and Food Chemistry*. 55: 10366-10372

Fonseca, J.M. and Kim, H.J. 2007. Effect of soil moisture and sunlight prevailing during the week before harvest on quality of lettuce. Annual ASHS meeting. Phoenix, July 16-19. HortScience (Abstract).

Fonseca, J.M. 2007. More fresh cuts please. *Fresh Americas* 1: 14-15.

Fonseca, J.M. and Ravishankar, S. 2007. Safer salads. *American Scientist*. 95:494-501.

Kim, H.J., Fonseca, J.M., Kubota, C, Kroggel, M., Choi, J.H. 2008. Quality of fresh-cut tomato as affected by salt content in irrigation water and post-processing ultraviolet-C treatment. *Journal of the Science of Food and Agriculture*. In Press.

Kim, H.J., Fonseca, J.M. C. Kubota, C., Choi, J.H. Kwon, D.Y. 2008. Salt in irrigation water affects the nutritional and visual properties of romaine lettuce (*Lactuca sativa* L.). *Journal of Agriculture and Food Chemistry*. In Press.