

## **Ultrasound-Assisted Washing of Fresh-Cut Leafy Green Produce**

Co-PIs Hao Feng and Arne J. Pearlstein at the University of Illinois at Urbana-Champaign developed and demonstrated technology for using ultrasound to inactivate bacteria on spinach leaves, and on fresh-cut Iceberg and Romaine lettuce. Ultrasound considerably enhances inactivation by chemical sanitizers, largely because of cavitation near the produce surface.

The results showed that ultrasound, in combination with chlorine or other chemical sanitizers, can play an important role in reducing bacterial counts on leafy green vegetables. Research conducted in a custom-designed commercial-scale flume showed that ultrasound is particularly effective at low produce loading, with enhancements in bacterial inactivation of more than "one log" (i.e., by more than a factor of 10). At high throughput rates, scattering and absorption of ultrasound by suspended produce leaves has the effect of blocking/screening, and it is important suspended produce be well mixed in the transverse direction as it moves through the flume, in order to ensure adequate exposure of leaves while minimizing product damage.