Case Study
Retailer Grocery Chain
Produce Preparation
Chemical EO water vs Non Chemical treatment

October 2014
A microbial comparison was conducted on site to compare spray rinsing of Romaine using treated water with Parker's Multi-Barrier 4 LRV Water disinfection system (non chemical) for comparison to City tap water (potable water) and Electroized Water (EO) batch treatment.

Treatment Processes:

Parker unit was plumbed to city water with additional carbon filter installedupstream to remove any residual chlorine and a 1.5 gpm spray faucet connected on the outlet side. Model BVC-3S-3-186KG Multi-Barrier system.

3 stage 4 LRV reduction of Bacteria, Virus & Cysts system which was performance tested by the U. S. EPA.
Stage 1: Dirt/particulate filter
Stage 2 Charged Membrane Filter for microbial retention
Stage 3 is High Dose UV (186 mJ/cm2) with UV sensor
Electronic control to display operating data including UV transmission

Sterilox unit: This unit has been used by the produce prep area to fill prep sink with Electroized Water with this onsite EO water generator. FDA listed for 20-60ppm of FAC to batch treat Fresh fruits and vegetables. Unit generates EO water which is used to fill a sink with pre determine amount of water to batch treat the produce. Instruction state to replace EO water when FAC <25ppm.

Tap Water: Chicago city water is plumbed to an existing sprayer at the prep sink. No additional treatment was installed for this potable water source.

Treatment Procedures:
The prep sink was sanitized prior to each treatment technique to eliminate surface contamination prior to treatment. Untreated Romaine was used from the same case for all tests.

Tap Water: Batch treated romaine for 2 minutes in prep sink. Drained excess water and samples were placed in Whirlbags (sterile). Four replicate samples were collected.

EO Water: Freshly prepared EO water was used to Batch treated romaine for 2 minutes in prep sink. Removed and soaked in Chlorine neutralizer solution for 30 seconds, drained and samples were placed in Whirlbags (sterile). Four replicate samples were collected.

Parker Water: Water was used to partially fill sanitized prep sink and then Romaine was sprayed with Parker water for ~30 seconds, drained and samples were placed in Whirlbags (sterile). Four replicate samples were collected.

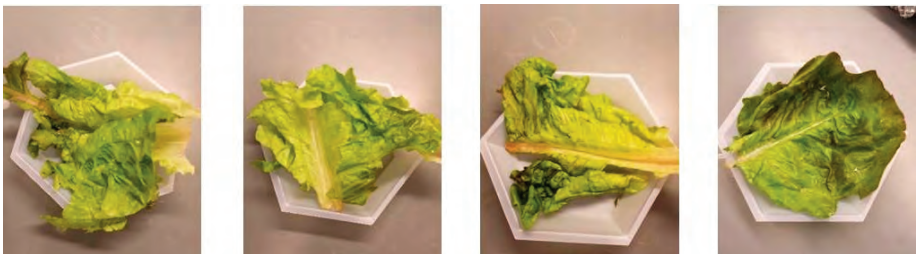
Untreated Samples: Samples from untreated case of Romaine were also collected in Whirlbags (sterile). Four replicate sampes were collected.

Transportation to Lab: Samples were placed in cooler and packed with ice and shipped overnight to Purdue University's Food Science Department the same day overnight delivery and received next morning before 10:00 am. Samples were immediately processed for testing by the lab.

NOTE: A third party lab determined by the Retailer was also contracted to test identical samples and shipped via courier same day. This report does not contain information results of that testing.

Photo's of samples as received in Lab:

Case Samples



Tap Water Samples

Parker Water Samples

Sterilox EO Water Samples

Conclusions and Results:

Shelf life:

The untreated Romaine had some browning upon delivery at lab however the Sterilox EO water treatment of ~ 60 ppm of FAC resulted in more severe browning of the Romaine. This browing effect would result in shorter shelf life due to the asethetics display vs tap and Parker water which did not have browning.

Key Test Data: Several test methods were employed however Purdue felt that the Petrifilm technique was most accurate and designed more for produce that other test methods. While no significant microbial differences were obvious Parker and Sterilox removed all of the E-Coli or 2.4 LRV.

Generic E-coli CFU's / g

	Avg.	SD
	Petrifilm (E. coli)	
Romaine - Case	2.5.E+02	4.3.E+02
Romaine - Tap Water	2.8.E+01	4.2.E+01
Romaine - Parker	**0.0.E+00**	**0.0.E+00**
Romaine - Strerilox	**0.0.E+00**	**0.0.E+00**

A full test report from Purdue University is available upon request