A4131: Enhancing Food Safety through Improved Processing Technologies

AFRI Food Safety Challenge Area

Hongda Chen, Ph.D.
Acting Deputy Director, Institute of Food Safety and Nutrition
National Program Leader, Bioprocess Engineering and Nanotechnology
USDA/NIFA
hchen@nifa.usda.gov
202-401-6497

March 23, 2015
New Approach (FY 2010)

Focus + Scale = Impact
Stakeholders’ Assessments of Knowledge Gaps

Barbosa-Canovas, Bermudez-Aguirre, and Chen, 2008. An Update on Emerging Food Processing Technologies in North America, Special Issue, Food Science and Technology International
Vision Statement

A Center of Excellence for Innovating Food Processing Technologies
(led by Dr. Dennis Heldman)

“To facilitate commercialization and communication for innovative food processing technologies through collaboration among university researchers, governmental agencies and industry users, in the research, development, design and application of processes for safe food products with enhanced food quality attributes and consumer acceptance”
Food Processing Technologies

• Develop and/or improve thermal and non-thermal processing technologies for effective decontamination and inactivation of pathogens in food and food products.
• Develop strategies to prevent cross contamination during one or more of the following: processing, packaging, transportation and/or storage.

up to $5M/project
FY2010, 3 projects; and
FY2014, 3 projects, plan 2 FASE projects
Food Processing Technologies

1. MW assisted pasteurization (MAPS)
2. Infrared (IR) heating
3. Radio frequency (RF) heating
4. Ultra violet (UV) radiation
5. EO water wash
6. Levulinic acid with sodium dodecyl sulfate (LA-SDS) wash
7. UV activated titanium dioxide (UV-TiO2) nanoparticle coating
8. High pressure processing
9. Pulsed light
10. Cold plasma
11. Ionizing irradiation
12. Ozone
Advance Technology to Marketplace through PPP

- Encourage to develop technology system prototypes and scale-up
  - Theoretical and experimental validation of effective processes
  - Demonstration of versatility for processing different food products
- Research consortium will be comprehensively multidisciplinary approach led by academic leading experts, and including industry R&D personnel and regulatory agency from get-go
- The goal is to further develop, and subsequently promote the use of, innovative and sustainable food processing technologies that improve food safety, and enhance or retain food quality and nutritional value.
WSU 15 kW 915 MHz Single-mode MAPS system (finalized in June, 2013)
operating at ambient pressure