

Innovative Food Processing Solutions for Food Waste Challenges



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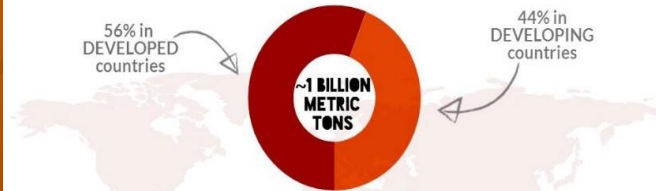
The Problem

Every year, American consumers, businesses, and farms spend \$218 billion a year, or 1.3% of GDP, growing, processing, transporting, and disposing of food that is never eaten. That's 52 million tons of food sent to landfill annually, plus another 10 million tons that is discarded or left unharvested on farms. Meanwhile, one in seven Americans is food insecure.

Global Issue

1/4 TO 1/3 OF ALL FOOD PRODUCED FOR HUMAN CONSUMPTION IS LOST OR WASTED

HERE'S THE BREAKDOWN:



THOSE LOST CALORIES COULD FILL HUNGER GAPS IN THE DEVELOPING WORLD



LEARN MORE AT WWW.WORLDBANK.ORG/FOODPRICEWATCH

SOURCES: FAO AND WORLD RESOURCES INSTITUTE

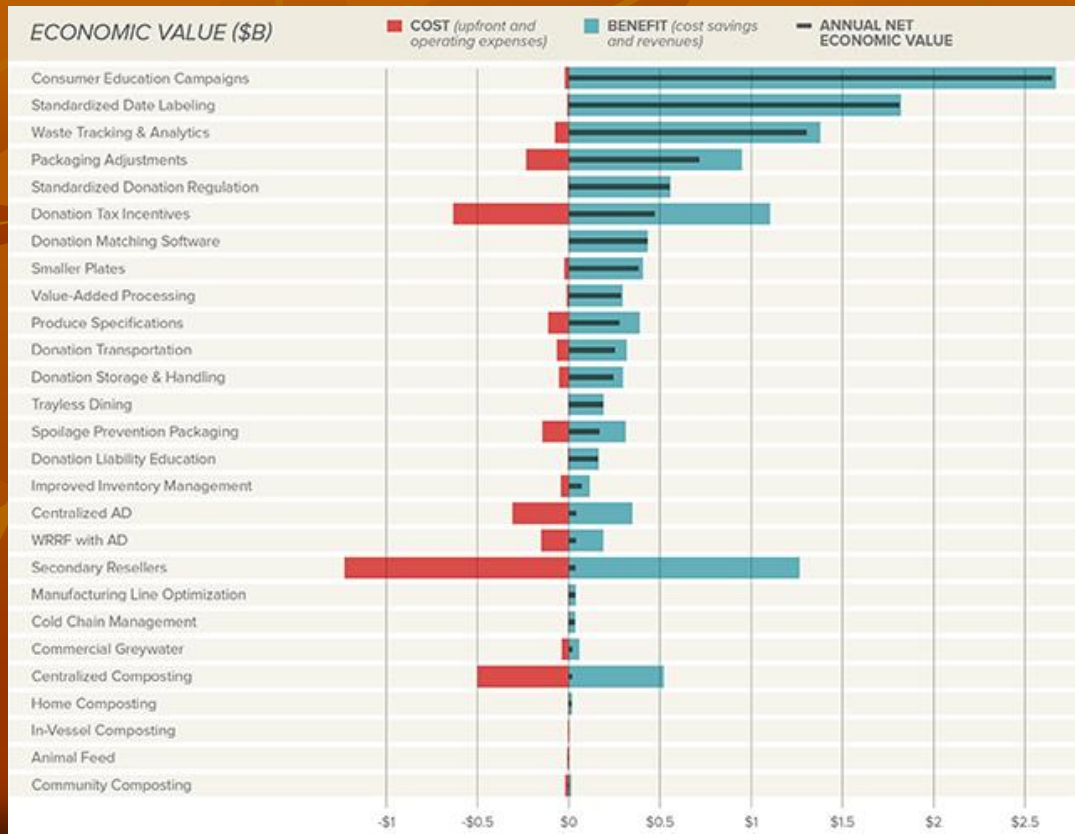
United States Issue

ReFED Food Waste Baseline: Nearly 63M tons of waste per year



FOOD WASTED BY WEIGHT — 63 MILLION TONS (\$218 billion)







United States Opportunity

IF IMPLEMENTED, THESE SOLUTIONS COULD GENERATE:



\$10 BILLION
of economic value

[VIEW THE TOP FINANCIAL
SOLUTIONS >](#)



1.8 BILLION
meals saved

[VIEW THE TOP MEAL
SAVING SOLUTIONS >](#)



**1.6 TRILLION
GALLONS**
water saved annually

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\$5.6 BILLION
annual consumer
savings

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\$1.9 BILLION
annual business
profit potential

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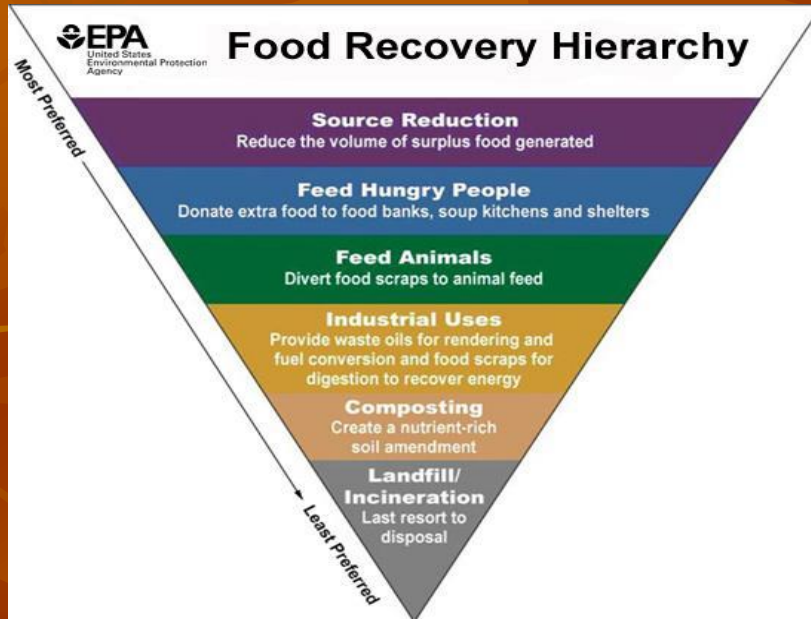
18 MILLION
tons of ghg
emissions reduced
annually

[VIEW THE TOP EMISSION
REDUCING SOLUTIONS >](#)

U.S. Food Waste Challenge

USDA and EPA

U.S. Food Loss and Waste 2030 Champions



One of the Solutions Value-Added Processing

- **Diversion Potential: 102K Tons**
- **Economic Value Per Ton: \$2783**
- **GHGs Reduced: 299K Tons**
- **Meals Saved: 171M Meals**



FOOD WASTE

Undersized or Blemished Produce



Convert to Puree and Process into Healthy Foods

Forming Technology (McHugh and Huxsoll)





Casting Technology



Fruit and Vegetable Edible Films

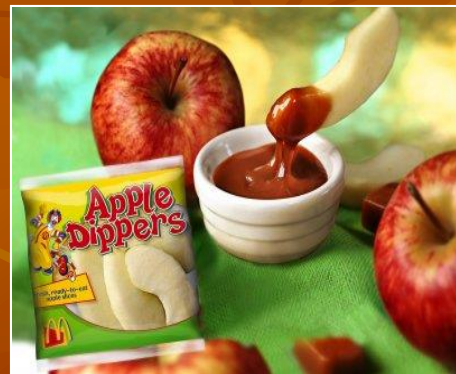


Edible Packaging Opportunities

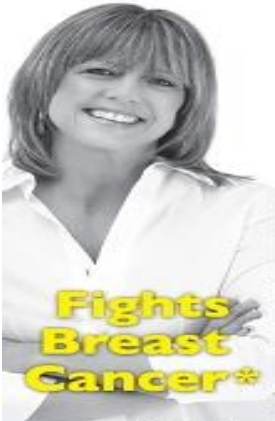
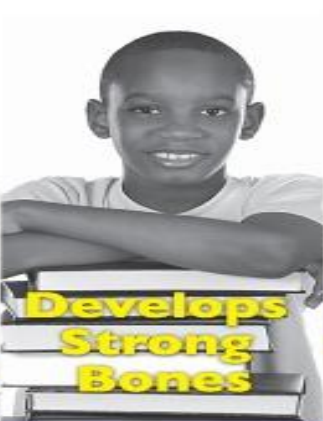

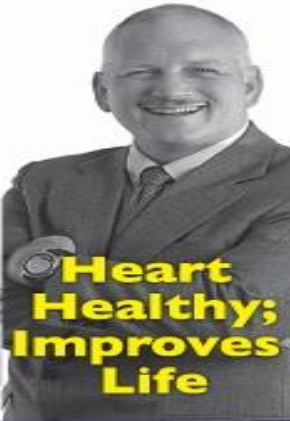





Coating Technology (Wong)

- NatureSeal
- Jointly developed and patented by USDA (WRRC- Albany CA) and Mantrose-Hauser, Co., Inc.,
- Extend the shelf-life of fresh-cut fruit and vegetables.
- Inhibit discoloration (browning), while maintaining the natural taste, texture and color.

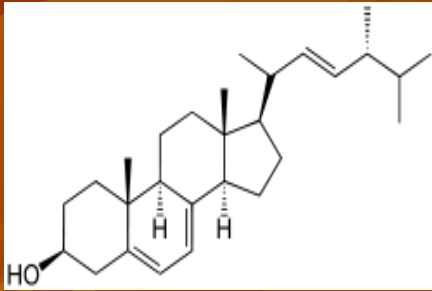


Innovative Mushroom Processing to Develop a Novel, Value-Added Source of Vitamin D

 <p>Fights Breast Cancer*</p>	 <p>Develops Strong Bones</p>	 <p>Helps Develop Cognitive Skills</p>	 <p>Heart Healthy; Improves Life</p>
 <p>NATURAL 20 Minutes Exposure Daily</p>	 <p>NATURAL One 3 oz. Serving Daily</p>	 <p>SUPPLEMENT Approx. 400 IU Daily</p>	

CHEMICAL CONVERSION

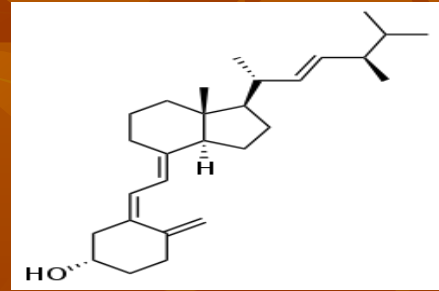
Ergosterol



UVB



Vitamin D2



Ultraviolet B Processing Uvitron Unit

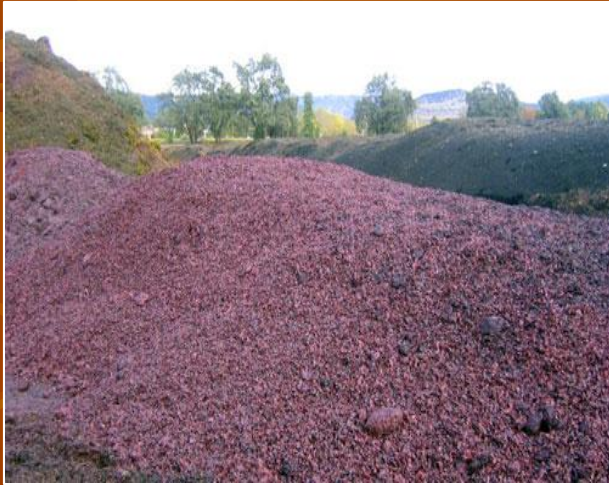


Novel Ultraviolet B Process Being Used Nationwide on All Mushroom Varieties by #1 Mushroom Producer in U.S.



FOOD WASTE

Wine Grape Pomace



Olive Pomace and Leaves



Process into Healthy Food Ingredients



Wally Yokoyama



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Article

pubs.acs.org/JAFC

Modulation of the Intestinal Microbiota Is Associated with Lower Plasma Cholesterol and Weight Gain in Hamsters Fed Chardonnay Grape Seed Flour

Hyunsook Kim,^{*,†,‡,⊥} Dong-Hyeon Kim,[§] Kun-ho Seo,[§] Jung-Whan Chon,[§] Seung-Yeol Nah,[‡] Glenn E. Bartley,[¶] Torey Arvik,[⊥] Rebecca Lipson,[⊥] and Wallace Yokoyama[¶]



REGRAINED

EAT BEER.



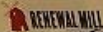




RENEWAL MILL



HELLO, MY NAME IS
OKARA
I'm a new superfood
and I'm here to help keep you:
HEART HEALTHY, WAIST TRIM & MUSCLES STRONG
(OH, AND I'M SO HELPFUL FOR THE PLANET!)



Scones made
Okara Flour



Innovation

“Never before in history has innovation offered
promise of so much to so many in so short a
time.”

Bill Gates