



## Food Security

PHOTO: TRISH MOORE

# Land-grant innovations lead to better quality food for improved nutrition

*To meet consumer demands for high-quality, healthy foods, universities are finding ways to enrich foods, improve taste and quality and extend shelf life of foods for less food waste.*

### Successful examples include:

- Scientists at **Oregon** State University identified essential oil coatings that protect fruit during storage and created nanocellulose-based coatings that extend the shelf life of fresh fruit.
- At **South Dakota** State University, researchers learned that ultrasound extends the shelf life of pasteurized milk.
- **Iowa** State University scientists are finding ways to preserve cheese-making ingredients so they can be used during long space missions.
- **Washington** State University research created a new flexible, multi-layer, metal oxide-coated packaging that extends the shelf life of ready-to-eat meals for soldiers and astronauts. Other innovations include ways to add healthy fiber to popular puffed snacks and cereals without affecting their shape or crunch.
- Researchers at the University of **Illinois** and **Washington** State found ways to reduce the fat uptake in fried foods. University of Idaho research is creating reduced-fat and reduced-calorie food products with more tasty textures.
- **Texas** A&M University is testing technology to enrich potato chips with antioxidants. **Pennsylvania** State University research is also maximizing antioxidants in chocolate.
- University of **Arkansas** scientists are using 3-D food printing to improve the nutritional value of food.
- University of **California** and Cornell University scientists in **New York** are creating new strategies to retain nutrients in juices and purees. University of **Georgia** and **Iowa** State researchers are also finding

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Prepared by the National Impacts Database Communications Subcommittee, supported by ESCOP, ECOP and USDA/NIFA.

02/2022



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ways to make the byproducts of wine grapes and apple and tomato juice processing more useful with drying techniques that do not damage sensory and nutritional quality.

- Using high-pressure technology, Rutgers University in **New Jersey** enriched baby carrots with calcium without affecting their texture or color.
- **Oregon** State researchers added nano-sized fish bone to fish sticks and fish burgers to increase calcium content.
- Scientists at **Mississippi** State University and the University of **Tennessee** tested nanoemulsions – liquid mixtures with nano-sized particles – that could be used to encapsulate and deliver nutrients, colorings, flavorings and antimicrobials into food products.
- New packaging, storage and transportation strategies minimize temperature changes and maintain frozen potato quality with research from the universities of Illinois, Washington and **Wisconsin**.
- At **Iowa** State, scientists found that adding recycled plastic films to packaging can prevent discoloration of deli meat, reducing waste due to unappealing appearance and diverting plastic waste from landfills.