

# FORUM

## Feeding the World Through Food Technology Excellence

**Scientists** at the Agricultural Research Service's Eastern Regional Research Center (ERRC) in Wyndmoor, Pennsylvania, conduct research on a wide spectrum of agricultural commodities. Their scientific discoveries are transferred to industry stakeholders and clients with the help of the ARS Office of Technology Transfer. Private-sector partners then further develop and launch new commercial products.

ERRC scientists have been developing technologies and food-preparation processes since 1940. These discoveries have led to industry partners' developing new food products that help feed the world. These food-science innovations benefit not only the producers of agricultural commodities, but also the processors and handlers of food products. The story beginning on page 4 of this issue highlights ERRC's food science equipment, technologies, and processes that lead to the development of value-added new products.

In 2005, ERRC consolidated its industry-scale equipment, which is used to research modern food processes, and created the Center of Excellence in Extrusion and Polymer Rheology (CEEPR). The center is focused on improving and testing technologies, processes, and equipment that will eventually lead to new foods and food ingredients with value-added health and functional attributes.

The CEEPR scientists now work in a modern pilot plant where new product concepts and prototypes are ramped up for industrial production. Successful new technologies are passed on to industry through technology transfer collaborations. For example, CEEPR scientists have developed unique extrusion texturization processes that are used to produce new crunchy food products. Extrusion is an engineering process that applies pressure and heat to raw materials

and converts them into new forms with specific textures and properties.

A recently developed ARS-patented process incorporates a standard industry-scale machine called the "twin-screw extruder." The patented process can be used to make crunchy snacks that are enriched with whey proteins. As a result of the CEEPR-developed technology, a line of whey protein-enriched food products was commercialized by a food company. The new snacks made by the licensee could help meet the demands of health-conscious consumers.

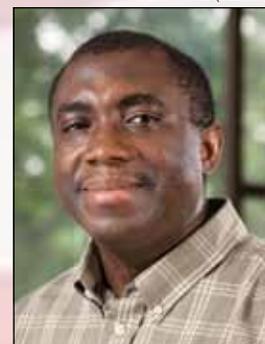
CEEPR scientists have also collaborated with other U.S. Department of Agriculture agencies to resolve multiple food and agricultural problems. In particular, as featured in this issue, developments by CEEPR scientists have brought enhanced features to a traditional food ration called "corn-soy blend" that supplements foreign food-assistance meals, particularly for young children.

USDA's Foreign Agricultural Service administers the McGovern-Dole International Food for Education and Child Nutrition Program, which provides U.S. agricultural products for school feeding and other projects in more than 30 countries. USDA's Farm Service Agency purchases the U.S. commodities that help these foreign countries.

At ERRC, food technologist Charles Onwulata coordinates CEEPR projects. Onwulata spent his youth in Nigeria, Africa, where he received foreign food aid early in his life. Later, he developed a passion for solving problems related to hunger. Now, Onwulata has worked with a team of USDA scientists, program managers, policy administrators, and international aid agencies to deliver a new emergency-aid meal called "instant corn-soy blend" (ICSB).

The extrusion technology used to make ICSB cooks food completely and quickly, under high heat and high pressure. The

crunchy, fully cooked product exits the extruder through an opening at the end of the machine in less than 2 minutes. That product is then crushed and milled to form the ration.



Charles Onwulata, supervisory research food technologist.

Onwulata's efforts to improve corn-soy blend began in 1995, and the idea that resulted in the new product was developed from 2000 to 2005. For the first time in 50 years, the USDA Farm Service Agency has issued an invitation for a bid for a fully cooked corn-soy blend food ration that can be stirred with potable drinking water to make a porridge.

Members of a network of nonprofit agencies that participate in the federally sponsored AbilityOne program, which employs significantly handicapped individuals in the United States, have voiced their interest to food-aid administrators in manufacturing, producing, and packaging the new food-aid product. ICSB could soon be purchased for the McGovern-Dole program.

The ERRC technology significantly enhances the uniform distribution of added vitamins and minerals in a supplemental food ration that can be used for overseas delivery for mass feeding of young children and others. You'll read about the details on the development of this technology—and how it can be used by manufacturers to produce the new food-aid product—in this month's feature article starting on page 4.

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