

Reducing waste of food: A key element in feeding billions more people

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Families can be key players in a revolution needed to feed the world, and could save money by helping to cut food losses now occurring from field to fork to trash bin, an expert said here today. He described that often-invisible waste in food—4 out of every 10 pounds produced in the United States alone—and the challenges of feeding a global population of 9 billion in a keynote talk at the 245th National Meeting & Exposition of the American Chemical Society.

"We will need another 'Green Revolution' to feed the world by 2050," said John Floros, Ph.D., referring to the development of high-yield, disease-resistant breeds of grain and other agricultural innovations that took root in the 1960s. "That will mean scientific innovations, such as new strains of the big three grains—rice, wheat and corn—adapted for a changing climate and other conditions. It also will require action to reduce a terrible waste of food that gets too little attention."

Floros cited estimates that in many developing countries up to half of the food harvested from farmers' fields is lost before reaching consumers. He is dean of the College of Agriculture at Kansas State University. That waste can occur due to spoilage from improper storage of grain during transportation or from pests. Rats and mice alone eat or spoil 20 percent of the world's food supply due to contamination with their urine and feces.

"A different kind of waste occurs in the United States and some other developed countries," Floros said. "Developed countries have much

more efficient systems for preserving, storing, transporting and protecting food from spoilage and pests. But as a nation—households, supermarkets, restaurants, other food-service providers—we throw away about 4 out of every 10 pounds of food produced each year."

Government studies show, for instance, that the average family in the [United States](#) throws away 20 pounds of food a month, more than \$2,000 worth every year for a family of four. It includes food that has gone uneaten and spoiled in refrigerators and on pantry shelves, as well as food that people throw away after cooking. Uneaten food actually rivals paper, plastic and other refuse as the No. 1 material in some municipal landfills.

Scientists know that food waste in landfills, for instance, releases methane gas as it decomposes. Methane is about 20 times more potent than carbon dioxide as a greenhouse gas that fosters global warming. Floros pointed out that reducing food waste would contribute to solving other great global challenges that society faces in the 21st century, beyond feeding a booming population. Wasting food wastes the freshwater needed to grow it, at a time when 1.2 billion people lack access to clean water. It also wastes energy, fertilizers, pesticides and other resources used in the food supply.

Supplying more food, however, is only part of the challenge, Floros emphasized. "Millions of people in some developing countries are becoming more affluent. In the past, people were satisfied with food that filled them up and sustained life. Increasingly, they will demand food that is convenient to prepare, certified as safe and highly nutritious and tastes good."

He cited the People's Republic of China as an example. The middle class in China is now larger than the U.S. population and is increasing in size year by year. And people in China are now consuming almost 3 times as

much meat compared to a few decades ago. Demand for convenience foods also is rising with the growth of the urban population.

Several other food-related [challenges](#) lie ahead, Floros pointed out. Water, for instance, is becoming scarcer, as is fertile farmland. Global climate change may stress those resources even further. The demand for sustainable energy may divert more cropland to production of crops for biofuel production. Economic conditions threaten less investment in agricultural research and development. Drought and other extreme weather could impact food production. And consumption of too much [food](#) and less nutritious foods underpins epidemics in obesity and type 2 diabetes.

"We're not doing enough to resolve these complex issues that are critical for providing 9-10 billion people with a nutritious diet," said Floros.

"Consumers, industry, universities and governments all need to pitch in. The first step is more awareness of these issues and the need for action on multiple levels of society."

More information: Abstract

Scientific and technological developments over the last century transformed our food system into a global, enormously complex, and extremely sophisticated system that has successfully achieved a safe, nutritious, abundant, and sustainable food supply for healthier people everywhere. Nevertheless, projected increases in human population, greater urbanization and an improved diet indicate that current food production levels must be raised substantially, and processing methods must be improved significantly over the next few decades. In addition, our food system faces other serious challenges, including environmental changes, water pollution and shortage, soil erosion and nutrient depletion, energy availability and price, limited food accessibility and malnutrition, over-consumption and obesity, longer human lifespan and

an aging population, food safety concerns, and threats from terrorism. We will briefly review these challenges and look into the future, when food scientists and technologists will work closely with chemists, biochemists, animal scientists, agronomists, horticulturists, molecular biologists, toxicologists, materials scientists, nanotechnologists, bioengineers, and other experts in informatics, nutrigenomics, medicine and health sciences to improve the food system and make life better for everyone.

Provided by American Chemical Society

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