Insects as the food of the future

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As the human population grows, it is critical that the drain on the planet's resources be lessened by decreasing consumption of animal protein. According to two panel discussions on June 23 and 24 at the 2014 Institute of Food Technologists (IFT) Annual Meeting & Food Expo in New Orleans, insects are a promising, economically viable alternative source of high quality protein that leave a substantially smaller environmental footprint.

The world adds about 70 million people each year to the population. If worldwide growth continues at the current rate, the population is expected to reach more than 9 billion by 2050, adding twice the current population of China. Approximately 70 percent of agricultural land, and 30 percent of the total land on earth, is currently used to raise livestock, the world's main source of protein.

"Insects require less feed, less water, less land, and less energy to produce and their production generates substantially lower environmental pollutants, such as pesticides and greenhouse gases," said Aaron Dossey, Ph.D., founder/owner of All Things Bugs LLC, in Gainesville, Florida, a company that provides protein-rich insect powder for commercial use.

According to Florence Dunkel, Ph.D., Associate Professor of Entomology at Montana State University and editor of Food Insects Newsletter, "Eighty-five insect species in the U.S. are documented as potential food sources; worldwide, there are 1,900 species." She cites locusts, grasshoppers, crickets, silk moth pupae, and beetle and moth

larvae among the top insects consumed as food, worldwide.

While insects are considered tasty and nutritious in other countries, including Thailand, Mexico and Uganda, Americans are less enthusiastic about eating bugs. "We have to overcome the 'ick' factor," said Laurie Keeler, Senior Manager-Food product Development, the Food Processing Center, University of Nebraska. "It's a cultural barrier that has to be overcome. We have spent a lot of time worried about insects getting into food; now we want to encourage eating insects as food."

Most insects are a rich source of high-quality, highly digestible protein. "Some insects are as much as 80 percent protein by weight and provide more essential amino acids than most animal proteins," said Dr. Dossey. "They are also rich in nutrients like omega-3 fatty acids." On a dry weight basis, crickets contain as much omega-3 fatty acids as salmon.

"Western cultures' aversion to the use of edible insects as a food source is a serious issue in human nutrition. But it's the way forward into a sustainable world environment," said Dr. Dunkel.

Some entrepreneurs, such as Patrick Crowley are making it happen. Crowley is the founder of Chapul Cricket Bars, the first company in the United States to use insects as source of nutrition. At Chapul, he is directly challenging the existing perceptions of insects as food by producing, marketing, and selling an energy bar, in a variety of flavors, made with high-protein cricket powder. "It's an exciting time to be the forefront of this budding industry," said Crowley

While in some countries, insects are harvested in the wild, such practices are typically inefficient and involve risks from environmental toxins and pathogens. Insects, such as crickets and mealworms, can be efficiently farmed in an industrial setting free from contaminants. In fact, samples from insect farms in the U.S. and Europe have been tested for

contaminants that sometimes present problems in foods from animal sources, such as salmonella, listeria, E. coli, or Staphylococcus aureus, and have been found to be free of contaminants.

There are a number of challenges for quality mass production of insects that still must be overcome, but the expert panels agreed that insects as a source of food is the way of the future.

Provided by Institute of Food Technologists