

Changing appetites

Given the world's voracious and growing appetite for animal products, however, how could people be persuaded to eat less? One approach, scholars say, is to raise the price to reduce demand. If meat prices reflected the true ecological and climate costs of raising farm animals, for instance, many people would buy less, suggests Lester Brown of the Earth Policy Institute in Washington, D.C. He'd like to see taxes that are tied to meat's carbon footprint. Beef might get higher taxes than chicken or catfish, he says, predicting that such levies "would free up grain for those further down the food chain."

A similar approach calls for removing subsidies—both obvious and hidden—for meat producers. Beef exporter Brazil, for instance, indirectly subsidizes meat consumption by not charging consumers for the tropical forests destroyed by ranching, argues Sjur Kasa, a sociologist at the University of Oslo. Ending subsidies would be "the most powerful tool for curbing meat consumption," Kasa says, but it would be "a very difficult battle." So far, however, the battle hasn't been joined. "There are really no big victories when it comes to making people eat less meat for sustainability reasons," he says.

Campaigns directed at consumers, emphasizing the health benefits of reducing calories and animal fats, could prove a winner, says Danielle Nierenberg of the Worldwatch Institute in Washington, D.C. She notes that concerns about health care costs and a greater focus on preventing disease have helped spur a number of innovative efforts. In 2003, for instance, the Johns Hopkins Bloomberg School of Public Health started "Meatless Mondays," an initiative to reduce U.S. meat consumption by 15%. The organizers were inspired in part by government campaigns during World War I and II to ration meat for troops. In May 2009, the city council of Ghent, Belgium, proclaimed that its citizens should avoid eating meat on Thursdays. And last fall, Baltimore became the first city to serve only vegetarian meals 1 day a week in public schools.

So far, it's hard to know if these small-scale efforts have had any significant impact. And Rosegrant has an overarching concern: "What worries me is that people will think that's all we need to do." To truly ensure global food security, he says we'll also need much greater investment in agricultural research to boost yields and more economic development that increases incomes in poorer nations. "We have to go beyond personal responsibility," he says, "to policy action."

—ERIK STOKSTAD

NEWS

For More Protein, Filet of Cricket

COULD AN AFRICAN CATERPILLAR BE THE NEW BEEFSTEAK?

As the world diverts more of its grain harvests into producing meat, some scientists are pushing policymakers to take a closer look at insects as an environmentally friendlier source of protein. Whereas a cow needs to eat roughly 8 grams of food to gain a gram in weight, for instance, insects need less than two. "If you are going to feed 9 billion people, we cannot ignore the efficiency of insects as protein producers," says Paul Vantomme, senior forestry officer at the United Nations Food and Agriculture Organization (FAO) in Rome.

Consider, for instance, the mopane worm. These caterpillars of the emperor moth feed on the leaves of mopane (mo-PAN-ee) trees, which emerge in southern Africa's summer, a time when other staples can be in short supply. Dried, stewed, smoked, or fried, the insects are

a popular delicacy. And they are just one of hundreds of insect species that play an important role in the diets of millions of people.

"Nutritionally, it is excellent food," says Arnold van Huis, an entomologist at Wageningen University in the Netherlands. "It's the same or even better than conventional meat, fish, or poultry." Just 100 grams of caterpillars can provide all of an adult's recommended daily protein, along with iron, B vitamins, and other essential nutrients, he says.

Such eye-opening statistics have prompted FAO to develop new policy guidelines—expected later this year—that will encourage countries to include insects in their food-security plans. Vantomme hopes the guidelines will lead to more constructive discussions about managing insects. Currently, he says, "some [advisers] get their insecticides ready, and others get their chopsticks."

Currently, most edible insects are collected in the wild. In Mexico, for instance, farmers collect *chapulines* (young grasshoppers) from their maize and alfalfa fields, where they would otherwise do damage. FAO, however, is taking a closer look at experimental insect breeding to see whether it can be both ecologically and economically sustainable. Researchers are also studying whether they could use insect protein in livestock feed or even as a food additive.

A scattering of enthusiasts think that entomophagy—the technical term for eating insects—could even catch on among Europeans and North Americans. In the Netherlands, a company called Bugs Organic Food markets mealworms and grasshoppers through two dozen outlets. The effort has had some success—even "the minister of agriculture held a grasshopper" at a press conference, van Huis says. She didn't eat the hopper but did approve subsidies for Bugs Organic Food to further develop their products.

—GRETCHEN VOGEL



Crunchy delight.
Grasshoppers known as *chapulines* in a Mexican market.

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