

You're Saving The Planet

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pressed to be self-sufficient in food production as their affluence increases.

India is running away from vegetarianism. Though they won't eat meat from cows, the Indian McDonald's serves "mutton burgers."

Removing trade barriers to allow western technology to feed the developing countries will be critical, according to Avery.

And people critical of western civilization should take note. America and other developed countries only use about 1.5 percent of the land surface for cities and urban development.

But what about the environmental effects of high-production agriculture, particularly animal confinement housing?

Though it was hard to get information, Avery discovered that in North Carolina, along the Black River (the center of the state's hog industry), there has been a 500 percent increase in the hog population in a 10-year span, from 1985-1995. Though critics suspected that the hog industry was the culprit in water quality, in actuality, looking at state-supplied figures, the water quality actually improved after the hogs were brought in.

Trouble is, the general media is to blame for stirring the controversies, Avery noted.

"We're in a war, and reporters are not on our side," he said.

Producers and the agri-industry that supports them need to dispel the myths of the "evils" of confinement agriculture and "factory farming," he noted. Those developments in large-scale, family farms ensure improved food quality and safety and use less land.

"The Spotted Owl wouldn't be here without high-output agriculture," Avery said. "And

let's not let the public forget that."

Agriculture industries must do their part to support their message, also, that food quality and safety are number one.

John Marcy, extension food scientist with the University of Arkansas in Fayetteville, Ark., noted that food safety, like marketing, is not really a science. "It's really perception," he told those at the poultry conference.

The National Academy of Science and other organizations that study food safety noted that it is impossible to develop completely risk-free foods. "Chickens will continue to poop," Marcy said. Along with animal manure come real concerns about protecting the safety of the food.

Fortunately, a national egg producing model is being developed from the Hazards Analysis Critical Control Points (HACCP) program begun by Pennsylvania egg producers. The Pennsylvania Egg Quality Assurance Program (PEQAP) is being used as an industrywide, national model.

Because of the HACCP programs, the Centers for Disease Control in Atlanta, Ga. have noted that foodborne illnesses are down dramatically. "The government regulations are working," said Marcy.

Though PEQAP assures control programs regarding Salmonella enteritidis (SE), a real concern is dealing with campylobacter, a pathogen that can cause human illness, from broilers, according to Marcy.

Marcy said listeria is "going to be an issue, much more than ever before." As a result, more nursing homes, hospitals, and additional care facilities are adopting precooked foods to provide improved control of human pathogens.

"They have gone to a whole

lot of cooked product," Marcy said.

Though salmonella requires heavy doses (in the millions) to begin to have a dramatic human health effect, campylobacter requires only 500-1000 cells total to be effective and cause human sickness. To combat these problems, a couple of companies — IBP and Tyson — have adopted electron beam irradiation technology developed in California to ensure product safety. It won't be long before irradiated poultry and other products will be on store shelves.

For listeria, which is fairly deadly for the old, young, or immunocompromised, noted Marcy, many cases included sudden abortions. The bacteria are present in the production facility, coming through the raw material, so it's almost impossible to prevent contamination totally.

But restaurant and food preparation managers have already been told: the number-one cause of foodborne contamination is the Norwalk-type virus, from human feces, which can be present in a handshake. When people get infected with the pathogen, they can experience diarrhea. For control, the key is to "get people to wash hands before preparing food or after eating chicken," said Marcy. "That would take care of 60 percent" of the problem, he noted.

"There's nothing you're doing that an 18-year-old cook can't undo," Marcy said.

GMO Update

Genetically modified organisms, or GMOs, have become the center of controversy in agriculture lately.

According to Michael A. Elliot, Wenger's Feed Mill director of technical services, genetic enhancement of food has been occurring since the 1860s when

Gregor Mendel, an Austrian monk and botanist, crossbred garden peas.

Geneticists since then have done the same, in a variety of ways, selecting for desirable product, improved size, better production, increased yield, and other items promoted by "hybrid vigor."

GMO technology has allowed a dramatic increase in plant productivity. GMO techniques allow the use of plant recombinant DNA to provide more precise plant characteristics. The changes can be made more rapidly "than traditional selection methods," Elliot said.

There are several GMO products that the world would be hard-pressed to do without. They include human insulin (more than 95 percent of the insulin is produced by GMO bacteria), more than 80 human pharmaceuticals derived from biotechnology, and lots of conventional seed.

There are 17 varieties of GMO corn, including herbicide-tolerant and insect-resistant (Bt); six varieties of tomatoes, including those that improve taste, color, texture, shelf life, and even frost tolerance; one variety of pepper (for improved taste, texture, and other factors); one for potatoes (Bt); one for peanuts (extended shelf life, other factors); five for soybeans, including herbicide tolerance and reduced levels of saturated fats; one canola (herbicide tolerant); and one sunflower (reduced saturated fats).

There are five milk fermentation GMO products. Seventy-five percent of all cheeses are made from GMO bacteria (more than likely, most people eat cheese fermented with GMO bacteria) and one milk (BST).

Most of the soybean oil uses GMO grains. Without Bt corn, 20 percent of the total crop would be lost at a total of \$10 billion worldwide. Bt-based microbial insecticides have been used for more than 40 years.

The Bt toxins are very specific. The Bt corn, introduced by Monsanto in 1996, has allowed 3.5 million pounds less of the pesticide to be used in 1999. U.S. cotton producers have reduced

pesticide use by 85 percent because of Bt cotton varieties.

Bt corn is healthier, with more nutritional value, and less likely to be contaminated with molds and mycotoxins, Elliot noted.

All GMO products are identical to the conventional versions of the product with the sole exception of a modified protein. The modified plant DNA is not in the meat, milk, or eggs, and the animal and human digestive system is a hostile environment, which rapidly degrades any DNA. Animal research trials show no difference on animal performance with the GMO crops.

To prove the safety, on a 14-day trial, a mouse was fed Bt protein with no negative effects. A 220-pound animal would have to consume 70 tons of Bt corn in one sitting to have the same effects.

In April last year, the research team that created the Bt technology was given a presidential award, the National Medal of Technology, for their achievements, according to Elliot.

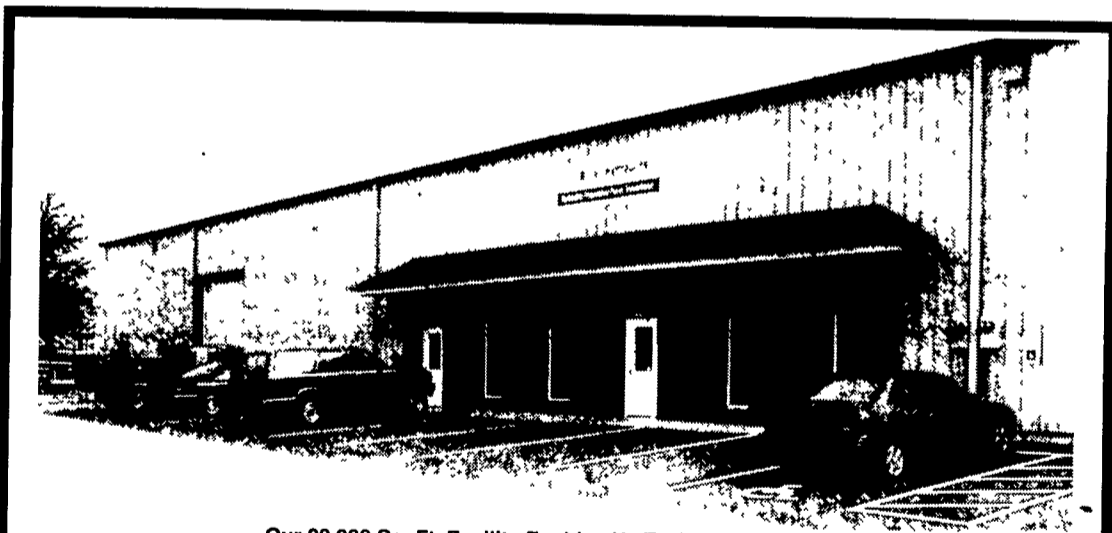
What caused the controversies, noted Elliot, was the suspicions the public have to new technologies from the animal producer industries in general. The biotech companies did not feel the need to educate the consumers before the products were released.

There are additional, beneficial GMO crops to soon hit the pipeline that could have dramatic effects on feeding the world. One is a GMO "golden rice" that has enough vitamin A to keep thousands of children in developing countries from going blind. Despite all that, the European Union is pulling the plug on their investment in the golden rice technology "because of political correctness," Elliot said.

Critics wonder whether it is "ethical to restrict development of genetically modified products to improve the nutritional status of malnourished people around the world," said Elliot.

Meanwhile, the biotech companies have to improve their educational efforts to promote GMO foods to the public.

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