Toward a Safer Food Supply

PEGGY GREB (K8666-1)

America's food supply is among the safest in the world, thanks in part to scientists in ARS' nationwide network of food safety labs. Here's a glimpse at some of the work taking them into the new millennium.

• While convenient and healthful, fresh-cut fruit and vegetable products—like bagged salad mixes and ready-made fruit salads—can be targets of food-poisoning microbes. Scientists are experimenting with ionizing radiation to zap microbes like *Escherichia coli* O157:H7 and *Salmonella.*

• New research may yield fast, reliable tests to ensure shellfish products are pathogen-free. Assays will target organisms like hepatitis A and *Vibrio vulnificus,* which can infect oysters and clams.

• Livestock manure may harbor pathogenic microbes like *Cryptosporidium parvum.* These organisms may make their way into foods if raw or improperly composted manure is applied to fields, for instance. New studies of pathogen growth, survival, and movement into soil or irrigation water will seek inexpensive, effective ways to kill the pathogens before they can infect crops.

• Antibiotics used to protect livestock from disease or boost growth might contribute to development of food-poisoning microbes that are drug-resistant. This may make the microbes more difficult to kill if they were to move from animals to humans via meat or poultry products. ARS microbiologists have begun testing antibiotic resistance of many pathogens, as part of the USDA and Food and Drug Administration's new National Antibiotic Resistance Monitoring System.

• Scientists are helping food producers identify potential contamination areas in processing plants, so they can take preventive measures. Producers and scientists are determining the most hazardous sites for each stage of production and are creating practical ways to reduce contamination risks.

• Leading-edge technologies like biosensors and genome mapping may prove invaluable in battling food pathogens. Biosensors may use harmless compounds that will bind to pathogens and send a signal—through a chemical change, for instance—detectable by high-tech instruments. Future biosensors for food pathogens are expected to be at least 100 to 1,000 times more sensitive than today's.

And genome mapping of plants, animals, and microbes may open the door to new strategies to inhibit pathogens. Rebuilt genes, for example, could make tomorrow's plants and animals unsuitable hosts for pathogens, thus reducing our exposure to them.—By **Marcia Wood,** ARS.

This research is part of Food Safety, an ARS National Program (#108) described on the World Wide Web at http://www.nps.ars.usda.gov/programs/appvs.htm.

For details, contact Food Safety National Program Leaders James A. Lindsay or Jane F. Robens, USDA-ARS National Program Staff, 5601 Sunnyside Ave., Beltsville, MD 20705-5138; phone Lindsay (301) 504-4674, Robens (301) 504-5381, fax (301) 504-5467, e-mail [Lindsay] jal@ars.usda.gov [Robens] jfr@ars.usda.gov. ◆

Silent Spring published, documented the effect of chemicals on the environment.

Established first monitoring program to determine effects of typical agricultural pesticide use.

First commercial semi-dwarf cultivar of a cereal grain in North America produced; Gaines high-yield wheat helped launch "Green Revolution."

First field tests conducted for automated irrigation system.

Durable press (permanent press) cotton textile developed.