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Food Safety
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K-State, County Extension Councils, Extension Districts, and U.S. Department of Agriculture Cooperating

Upcoming Events

December 14, 1999

The New Kansas Food Code
Emporia, KS
Lyon County Health Department
8:30-10:00 or 1:30-3:00
Contact: Daryl Meierhoff
785-296-5600

December 14, 1999

The New Kansas Food Code
Kansas City
West Branch Public Library Conf. Room
3:00-5:00 pm
Contact: Emerick Cross
913-573-6784

December 15, 1999

The New Kansas Food Code
Ottawa, KS
Franklin County Office Annex
8:30-10:00 or 1:30-3:00
Contact: Daryl Meierhoff
785-296-5600

January 3-7, 2000

Indoor Air Quality
Manhattan, KS
Contact: Larry Erickson
785-532-4313

January 12, 2000

The New Kansas Food Code
Lawrence, KS
Health Deptartment Conf. Room
9:00-11:00 am
Contact: Roger Ozias
785-296-5601

January 18, 2000

The New Kansas Food Code
Overland Park
Johnson County Community College
7:00-9:00 pm
Contact: Bob Fields
913-492-0402

January 27, 2000

Registered Sanitarian Exam
Wichita, KS
Contact: John Davis
316-268-8477

February 1 - 2, 2000

Serving Safe Food
Topeka, KS
Contact: Cindy Evans
785-232-0062

K-STATE Research and Extension
Food Safety NEWS
Food Safety CURRENT NEWS

On the World Wide Web

USDA - Agricultural Biotechnology

http://www.aphis.usda.gov/biotechnology/

EPA - Office of Science Coordination and Policy

http://www.epa.gov/oscpmont/oscpbiotech.htm

FDA - Biotechnology

http://vm.cfsan.fda.gov/~lrd/biotechm.html

FDA Policy on Biotech Foods

http://vm.cfsan.fda.gov/~lrd/biopolcy.html

Bioengineered Food & Allergies

http://vm.cfsan.fda.gov/~dms/pubalrgy.html

Biotech Information Center

http://www.nal.usda.gov/bic/

State Department -Economic Perspectives- Biotech

http://www.usia.gov/journals/ites/1099/ijee/ijee1099.htm

K-State Research and Extension Food Safety

http://www.oznet.ksu.edu/foodsafety

Foodborne Illness Estimates Updated

To better quantify the impact of foodborne diseases on health in the United States, scientists at the Centers for Disease Control and Prevention compiled and analyzed information from multiple surveillance systems and other sources. New estimates show that foodborne diseases cause approximately 76 million illnesses, 325,000 hospitalizations, and 5,000 deaths in the United States each year. Known pathogens account for an estimated 14 million illnesses, 60,000 hospitalizations, and 1,800 deaths.

Three disease-causing organisms, *Salmonella*, *Listeria*, and *Toxoplasma*, are responsible for 1,500 deaths each year, more than 75% of those caused by known pathogens, while unknown agents account for the remaining 62 million illnesses, 265,000 hospitalizations, and 3,200 deaths. Overall, foodborne diseases appear to cause more illnesses, but fewer deaths than previously estimated.

Source: Mead et al, Emerging Infect. Dis. 5(5): 1999.

Genetically Modified Foods Latest Safety Issue

Controversies surrounding genetically modified foods are cropping up in Europe and in the U.S.

Genetic modification (genetic engineering) is a type of biotechnology used to develop specific traits in "transgenic crops". Those traits include such benefits as: resistance to herbicides, resistance to pests that destroy crops, improved product quality or shipping characteristics, and enhanced shelf-life. Some of the controversial issues are social, economic or ethical; some are regulatory and deal with safety testing and labeling; and others have to do with ownership of genetically modified crops and seed. The Food and Drug Administration is holding public hearings in three cities during November and December to take comments. Informed consumers should learn as much as possible about this technology and about these important issues affecting our food supply, here at home and in the global market.

FAQ's

* Which Federal agencies regulate biotechnology plant foods?

USDA's Animal and Plant Health Inspection Service (APHIS) regulates the field testing of genetically engineered plants and microorganisms. APHIS approves and licenses veterinary biological substances, including animal vaccines, that may be the product of biotechnology. APHIS is the government's lead agency regulating the safe testing, of biotechnology-derived, new plant varieties. Those wishing to field test or move a biotechnology-derived plant must generally obtain APHIS approval before proceeding.

The Department of Health and Human Service's Food and Drug Administration (FDA) governs the safety and labeling of drugs and the nations food and feed supply, including foods produced through genetic engineering, excluding meat and poultry.

The Environmental Protection Agency (EPA) ensures the safety and use of pesticidal and herbicidal substances in the environment and for certain industrial uses of microbes in the environment.

The Department of Health and Human Service's National Institutes of Health developed guidelines for the laboratory use of genetically engineered organisms.

* How widespread are biotech crops?

With APHIS approval, over 5000 field trials have been safely conducted since 1987. About 40 new agricultural products have completed federal regulatory requirements (from all relevant agencies) and may be sold commercially. They range from longer lasting tomatoes to pest-resistant corn.

USDA's Economic Research Service (ERS) recently released the first government data on acreage of biotechnology-derived crops. The ERS report - available on the web at www.econ.ag.gov/whatsnew/issues/biotech - indicates that biotech soybean, cotton, and corn acreages have increased dramatically since the introduction of these crops in the mid-1990's. They accounted for 20-44 percent of acreage planted in 1998.

Food Safety RESEARCH

Allergy and genetically modified plants

Genetic modification of crops results in the introduction of new proteins into the food plant. Because all allergens are proteins, the potential allergenicity of newly introduced proteins must be assessed. Few introduced proteins are likely to be allergens, however, testing is necessary to assure safety for consumers.

Allergens are proteins which can trigger the production of allergen-specific immunoglobulin E (IgE) in certain individuals. In foods that cause allergic reactions, only a few of the many proteins are capable of producing reactions. Common allergenic foods include milk, eggs, peanuts, soybeans, tree nuts, fish, crustacea (lobster, shrimp), and wheat. These foods account for about 90% of food allergies. Foods contain tens of thousands of proteins and very few are allergens. Allergens tend to be stable to digestion and processing and major allergens tend to be abundant proteins. Allergic reactions include gastrointestinal, skin and respiratory symptoms, and in some cases, anaphylactic shock. Rarely are allergies life-threatening.

If a protein from a known allergen such as peanuts, were introduced into a crop such as carrots, the chances for the carrots to be allergenic would be much greater than if the introduced protein had come from a non-allergenic source. In any event, testing for potential allergens is important in the development of transgenic products.

Food biotechnology, and specifically, genetic engineering, allows for a more accurate and precise method of enhancing beneficial traits in plants. Specific traits can be selected from one plant, and by moving the genetic code for that trait into another plant, the desired trait can be expressed in the host plant and reproduced in following generations.

A decision-tree strategy has been utilized to assess the allergenic potential of foods derived from genetically engineered crop plants. It includes assessments of the source of the gene to be transferred, the sequence of amino acids for the protein compared to some 198 known food and non-food allergens, immunologic assessments and assessments of physico-chemical properties of the protein(s) in question, including rate of digestion and degree of expressiveness in the transgenic plant.

Using this evaluation procedure, the proteins in genetically engineered products being marketed today or soon to be marketed, are determined to be non-allergenic. The proteins are from sources with no history of allergenicity. The proteins do not have the same or similar amino acid sequences of known allergens. All transferred proteins are readily digested and the introduced proteins are at low levels in the plants.

Source: Taylor, Notes: Oct 23, 1999; Nutr Abstr & Rev, 67(11), 1997; Env Tox & Pharm, 4:1997; Food Aust.48(7), 1996.

Biotech Glossary

Biotechnology: Using living organism to make a product or run a process. An old biotechnology - using yeast to ferment sugar in bread dough; a new biotechnology - genetic engineering.

Genetic engineering: Using recombinant DNA techniques or other methods to move one or several genes from one organism to another, to arrange one or several genes within a cell, or to alter gene-controlled processes.

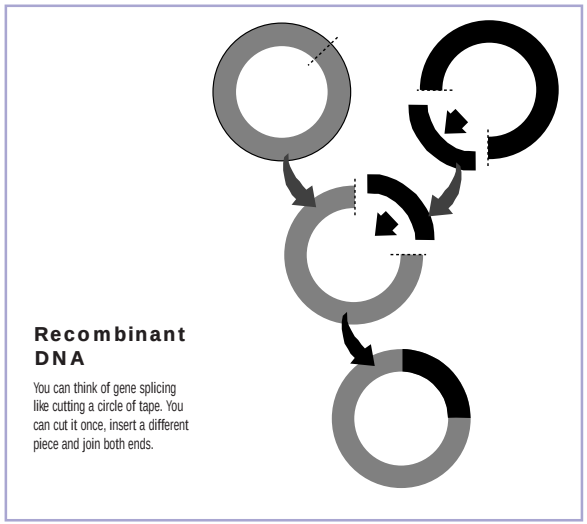
Gene: for genetic engineering, the smallest portion of a chromosome that contains the hereditary information for the production of a protein.

Recombinant DNA - (rDNA): Technique of taking copies of genes from one organism and inserting them in another organism which can be totally unrelated. Used to make human insulin and other products.
Source: Zinnen & Voichick, NCR Ext Publ No. 569, 1994

Bt corn has lower levels of mycotoxins

Researchers at Iowa State University recently reported (www.scisoc.org) that corn hybrids carrying the Bt gene have a bonus in addition to controlling corn earworm and corn borer larvae. Researchers have long known that insect injury can lead to greater invasion of stalks and ears by fungi like *Fusarium* and *Aspergillus*. These fungi not only reduce grain quality, but they also contaminate grain with mycotoxins. Fusarium produces fumonisins which are a group of mycotoxins that can be fatal to horses and pigs. There is some evidence that fumonisins are human carcinogens. *Aspergillus flavus* produces aflatoxin, a known potent human carcinogen. "Fusarium ear rot and fumonisin levels in MON810 and BT11 hybrids were uniformly low (usually less than 10% of the concentrations in the non-Bt hybrids)," according to Gary Munkvold and Richard Hellmich. "Field studies also have shown reduced kernel infection by *A. flavus* and lower aflatoxin concentrations in BT11 and MON810 hybrids compared with their non-Bt counterparts. However, these reductions have been less dramatic than those seen for fumonisins."

Summarized by Bob Bowden



Recombinant DNA

You can think of gene splicing like cutting a circle of tape. You can cut it once, insert a different piece and join both ends.

New Food Safety Hotline

The U.S. Food and Drug Administration's (FDA's) Center for Food Safety and Applied Nutrition (CFSAN) has a new Outreach and Information Center to get food safety messages to the public.

The center provides information on food safety, food additives, dietary supplements and cosmetics.

You can access the toll free line at 1-888-723-33663 (SAFEFOOD). Recorded messages are available at any time. If you want to talk with someone, call between 10am and 4pm, Eastern time. There is a lengthy set of instructions and voice mail decisions in order to obtain information, so if you try this....be patient.

New KSU Ag Biotechnology e-mail list

If you or a friend want to subscribe, send the following message to:

mailserv@lists.oznet.ksu.edu

subscribe agbiotech

To remove yourself from this mailing list, send the following email message:

unsubscribe agbiotech

For general instructions on how to use the mailserver, send this message:

help

To get in contact with us, (if you have trouble subscribing, unsubscribing, or have questions about the list itself) send email to rbowden@ksu.edu