Genetic Modification and the Beef Industry

Definitions

Biotechnology: the application of science and engineering in the direct or indirect use of living organisms, or parts or products of living organisms

DNA: deoxyribonucleic acid, which contains the information for determining the structure of proteins

GMO: a genetically modified organism; also can be referred to as transgenic

Gene: a segment of DNA, carrying genetic instructions to make one protein

Genetic modification: a series of techniques used to transfer genes from one organism to another

Modern biotechnology allows scientists to move genetic material from one organism to another through the tools of genetic modification. Genetic modification takes advantage of the fact that DNA has the ability to copy itself. By inserting genes from other species when the DNA is replicating, the genes can be included in the new DNA molecule. The result- a transgenic or genetically modified organism.

Are GMOs safe?

Health Canada and the Canadian Food Inspection Agency share responsibility for the safety of products from agricultural genetic modification . Health Canada evaluates the safety of foods, while the Canadian Food Inspection Agency looks at the potential effects of animal feed and animal health products on the environment, and on safety of the feed for livestock . No genetically modified organism is sold in Canada until it satisfies these government regulations.

How is genetic modification being used in the beef industry today?

Currently, genetic modification in the beef industry is concentrated in two areas- animal health products and animal nutrition. There are no genetically modified animals in the Canadian beef cattle herd.

Animal Health Products

Animal health products are used for the diagnosis, treatment and prevention of animal diseases. A category of products, known as biologics, are made from living organisms. The most commonly known examples would be vaccines designed to give immunity to specific diseases in animals. Animal health products are produced by conventional technologies as well as from genetic modification. Some genetically modified vaccines are very similar to vaccines that have been used in Canada for decades without any unexpected risk.

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Animal Nutrition

To date, 36 plant species with genetically modified traits have been approved for use as livestock feeds in Canada - including 13 corn, 11 canola, five potato, three cottonseed, two soybean, one wheat and one flax. These traits involve changes to a specific protein that results in the plant being resistant to a herbicide or insect, or makes a change to the quality of the plant. Many of the proteins expressed in these genetically modified plants are already used in Canada. For example, the genes that give resistance to the European corn borer in genetically modified corn produce the same proteins that are present in the natural insecticides used by organic farmers.

The results of more than 20 livestock feeding trials found no difference between genetically modified and non-genetically modified feeds on the health or growth of livestock. There is also no difference in the meat from livestock fed genetically modified feeds. The modified proteins in the feed are not passed onto humans who eat the meat or meat products of beef cattle fed genetically modified feeds.

What does the future hold for genetic modification and the beef industry?

Research is underway into potential uses of genetic modification in animal agriculture. Widespread and continued use, however, will depend on public acceptance of both the products and the processes involved in genetic modification.