

FASS Facts

On Biotech Crops – Impact on Meat, Milk and Eggs

Are the meat, milk and eggs
from livestock fed biotech feeds

safe to eat? **Yes!**



Background

The term “biotechnology” has sparked controversy in recent years. Much of the controversy is fueled by activist groups who perceive genetic enhancement as somehow “unnatural.” There are also concerns about introduction of genes that may produce allergenic responses or have adverse effects on the environment. However, biotechnology is a remarkable technology that has produced many benefits to consumers. Unfortunately, Americans don’t have the information they need to sort facts from fear about this technology and its benefits.

Today’s biotechnology is simply a more precise means of doing what has been done for centuries through conventional breeding – striving to develop crops and foods that have desirable characteristics. These characteristics might include protection against insect pests, which minimizes the need for pesticides; higher crop yields; or improved nutritional properties.



Conventional plant breeding was done through trial and error. Scientists could spend 10 to 15 years crossing plants and growing them to bring out certain characteristics from the tens of thousands of genes that each plant possesses. Oil seed rape (the progenitor of canola) was one of the successes of this type of crossbreeding. In fact, rapeseed oil was an industrial lubricant unfit for human consumption until canola was genetically modified to become low erucic acid rapeseed oil, which eliminated some of its anti-nutritional properties. Today, it is one of the healthiest oils on the market. Most foods consumed today – like corn, wheat and tomatoes – are long-term, conventional breeding success stories. And now, through genetic modification, desirable traits can be selected and more quickly incorporated rather than waiting a decade for results.

Genes from different species are often highly related. The same genetic material may be found in multiple species. New genetic material adds selected, special characteristics to the new plant. These special characteristics or traits benefit everyone: both the consumer as well as the farmer.



Do Livestock Consume Biotech Feeds?

Yes, livestock have been fed biotech feeds since biotech crops were first introduced in 1996. Recently, livestock feeds have been improved using modern methods of agricultural biotechnology, such as recombinant DNA technology. The application of recombinant DNA technology frequently has been referred to as genetic modification. Crops developed using modern methods of agricultural biotechnology are

referred to as biotech crops as opposed to crops developed using conventional plant breeding. Two important types of commercially available biotech crops include crops tolerant to herbicides and crops protected against insect pests.

Both conventional and biotechnology techniques have benefited agriculture immensely because they make feed more plentiful and affordable. When inputs are less costly, so are the outputs purchased by consumers: meat, milk and eggs. In fact, we spend significantly less of our disposable income in the United States on food than any other nation in the world thanks to the successes of our agricultural system, of which agricultural biotechnology is a key part.

Why Do Farmers Raise Biotech Crops?

Farmers raise biotech crops because they are more reliable and profitable than conventional crops.

First, the amount of insecticide applied to insect-protected crops is reduced. Yields of corn, cotton and soybeans are increased in many instances. The majority of these cost savings are enjoyed by the grower. Overall, the cost of producing an acre of the crop is reduced and some of these cost savings ultimately can be passed on to the consumer.

Since seeds for biotech corn and soybeans were first sold in the United States in 1996, farmers have continued to plant increasing acreage. More than one-half of the soybeans and more than one-third of the corn planted in 2000 were biotech crops.

Farmers and Consumers Enjoy the Benefits of Biotech Crops

Consumers have reaped the benefits of biotech crops in the form of higher quality products. In the future, consumers will see expanding benefits of biotech crops as the use and sophistication of biotechnologies grow.





For example, a corn called *Bt* corn has been bred to be protected against a common pest called the European corn borer. This results in less damage to the corn plant which, in turn, reduces the infection by a fungus that produces a mycotoxin called fumonisin. *Bt* corn varieties therefore contain less fumonisin. Fumonisin has been shown to be a carcinogen in humans, so risk of human exposure to fumonisin from corn-based products is being reduced thanks to biotechnology.

There will be many biotech crops with enhanced levels of nutrients or other beneficial substances in the plant. For example, “golden rice” is being developed with increased levels of vitamin A and iron. Golden rice could be a significant addition to the diet and health of many persons throughout the world who are currently deficient in vitamin A. Other plants will produce nutritionally enhanced oils, or will improve the shelf life of the food.

Are Nutrients or Anti-Nutrients in Biotech Crops Different?

No, both the levels of nutrients and anti-nutrients in the current biotech crops are the same as in conventional crops. As stated above, some crops are being developed which will have increased levels of nutrients, including feeds, like the lysine and methionine content in corn grain. Likewise, anti-nutrients, or undesirable proteins, such as trypsin inhibitor in soybeans or gossypol in cotton, are unchanged in biotech crops compared to conventional crops.

Livestock feeds such as corn grain, whole-plant chopped corn, corn stover and soybeans from the current biotech crops have been compared with conventional feeds to measure any changes in feed composition. The research clearly shows that the levels of nutrients – such as protein, carbohydrates, fat, energy, amino acids, fatty acids, minerals, vitamins and other components of biotech and conventional feeds – are substantially equivalent and are well within the normal range of values reported in the scientific literature.

Are Biotech Feeds Safe for Livestock?

Yes, biotech feeds are safe for livestock. Livestock digest and absorb nutrients from biotech feeds in the same way they do conventional feeds. The digestive process in all livestock breaks down the nutritional components in feeds and uses these nutrients for the growth and development of the animal.

In addition, livestock growth, milk production, milk composition and health are not different, whether fed conventional or biotech feeds. Over 30 different animal feed performance studies have been conducted. All of these studies have shown that corn grain or soybean meal from biotech plants performs similarly to the grain or meal from conventional plant varieties.

Are Nutrients in Meat, Milk and Eggs Different?

Nutrients in meat, milk and eggs from livestock fed biotech feeds are the same as those from livestock fed conventional feeds. Because most components of feeds are broken into smaller components during digestion by the animal, plant proteins have not been detected in milk, meat or eggs.

The introduced DNA and newly expressed protein(s) from biotech crops have not been found in the meat, milk or eggs from animals fed biotech crops.

Are Meat, Milk and Eggs Safe to Eat?

Yes, meat, milk and eggs from livestock and poultry consuming biotech feeds are safe for human consumption. By 2020, global protein consumption from meat, milk and eggs is predicted to increase dramatically, a “Livestock Revolution.” Therefore, with biotech crops and animal food products, we will benefit the nutrition and well-being of the world’s population, especially children in developing countries.

U.S. Government Agencies Heavily Regulate Biotech Crops by Requiring Extensive Field and Safety Tests



FOOD AND DRUG ADMINISTRATION (FDA)

The FDA ensures that any human food or animal feed derived from new plant varieties are safe to eat. After completion of the voluntary FDA consultation process, more than 40 crops have been developed for market. The FDA has recently proposed to change the process



from voluntary to mandatory. Foods derived from biotechnology must be labeled only if they differ significantly from their conventional counterparts. For example, if the nutritional value or the potential to cause an allergic reaction is altered.

UNITED STATES DEPARTMENT OF AGRICULTURE (USDA)

The USDA is the U.S. government's lead agency regulating the safe field-testing of new biotech plant varieties. Impact on the environment, on endangered or threatened species and on "non-target" species are all considered.

ENVIRONMENTAL PROTECTION AGENCY (EPA)

The EPA has authority over all new pesticides, including biotech plants, which produce their own protection against pests. In deciding whether to register a new biotech product, the EPA considers human safety, impact on the environment, effectiveness on the targeted pest and any effects on other endangered and threatened species.

Recently StarLink corn, which was approved only for animal consumption, was found in human foods. The EPA now has a policy of not approving biotech crops intended for animal feeding without simultaneously approving the crops for human use. This action is taking precautions against a recurrence of a StarLink situation.

Should We Label the Meat, Milk and Eggs?

FASS recognizes the significant logistical problems that labeling incurs for meat, poultry, egg and milk processors. FASS does not support labeling of food derived from animals fed biotech crop materials because the scientific evidence consistently indicates that meat, milk and eggs derived from animals fed

biotech feeds are equivalent to products from animals fed conventional feeds. FASS supports food labeling that is meaningful to the consumer and serves a specific purpose. FASS supports food labeling if a food product is substantially changed in nutritional composition or safety.

Conclusions

The Federation of Animal Science Societies has reviewed the scientific information concerning the consumption of biotech feeds by livestock. We conclude that:

- Acceptance of biotech feeds for livestock must be based on sound science;
- The use of biotechnology techniques will be essential to improving agricultural plants and animal products;
- Agricultural biotechnology is capable of improving supplies of livestock feeds and healthful animal and plant food products;
- The safety of meat, milk and eggs is adequately assured by the science-based risk assessment procedures used by government agencies and developers;
- The DNA introduced in biotech plants and the proteins encoded by this DNA have not been detected in the meat, milk or eggs from animals fed these products; and
- **Meat, milk and eggs from animals fed biotech feeds are safe for human consumption.**

For more information, contact the Federation of Animal Science Societies.

The Federation of Animal Science Societies (FASS) is a professional organization made up of approximately 10,000 scientists in academia, government and industry which exists to serve society through the improvement of all aspects of food animal production. FASS represents the combined memberships of the American Dairy Science Association, the American Society of Animal Science and the Poultry Science Association.



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