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ILC

BIOTECH'S FIVE MYTHS

NOTE: The following article is adapted from Farm Industry News, volume 34, number 3, pg.50-51. Karen McMahon authored the article.

The truth about biotechnology has been clouded by half-truths, detail omissions and over-exaggeration problems. Stanley Abramson, environmental attorney, recently spoke out regarding the "myths" about genetically modified organisms (GMO). These are loudly broadcast by opponents of biotechnology to anyone who will listen According to Abramson and the literature, these myths have been widely disproved by research and field practice.

Mr. Abramson, of the Washington D.C. law firm of Arent, Fox, Kintner, Plotkin, and Kahn, comes well qualified to discuss this issue. In the winter of 2000, he completed a committee assignment for the National Academy of Science (NAS). The committee investigated the risks and benefits associated with GMO crops and their regulation.

Their report was one of consensus; they found no evidence to conclude that products on the market today pose any harm to humans.

After working on the NAS committee, Abramson categorized the common misconceptions regarding biotechnology in the following five myths.

- Genetically Modified Plants are not regulated.
- No data exist to support genetically modified products.
- The public does not have a role to play.
- Benefits of biotechnology do not exist.
- There is actual harm to health and the environment.

Each of these myths will be expounded upon in the follow section.

Genetically modified plants are not regulated

The first myth is that these products are rushed to market with no special government oversight. Abramson says, "this is particularly painful to me because I was at the Environmental Protection Agency (EPA) in

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the 1980s when the early experiments were conducted and the coordinated framework developed. I can speak firsthand about the years of regulation that went into the development of these products."

The coordinated framework requires regulation by the EPA, the U.S. Department of Agriculture (USDA) and the Food and Drug Administration (FDA). Each agency is responsible for regulating certain aspects of the new products. Using the Bt potato as an example, Abramson says EPA regulated the insecticidal protein, USDA reviewed the plant itself, and FDA's jurisdiction included the safety of the entire product.

In the Bt potato, the health, safety and environmental data were reviewed by three different federal agencies over a seven-year period. No comparable oversight for conventional hybrids exists. The three agencies found no Bt protein in the environment or in the food products, making the products safe for human consumption. Just because a plant has been genetically enhanced, doesn't make it hazardous. The biotechnology industry supports the frameworks regulation.

No data exist to support genetically modified products

Abramson stated that he was told that "there was simply no data to support biotech product approvals. In reality all three of the federal agencies require that data be submitted and then reviewed by the proper personnel. There is clearly data and a great deal of it, all available for public review, under the freedom of information act."

All three agencies require an astounding number of studies from the developers of the products. These studies must consider potential adverse effects, such as impact on non-target insects and insect resistance. If an issue comes up that wasn't considered during the initial reviews, the agencies often require more data.

The public does not have a role to play

Through the 1970s and 1980s as the issue of biotechnology came to the forefront, the agencies and even Congress held many public hearings and comment periods. "But in reality most people didn't really care," Abramson said. Beyond industry representatives and a few environmental groups, very few members of the public or the media attended the hearings.

Each agency's public records show that these issues were debated in the public arena. The public continues to have opportunities to participate through Web sites and public comment periods. Abramson stated, "Extensive public participation opportunities over the last 25 years have existed."

Benefits of Biotechnology do not exist

The benefits are well known to seed developers and growers, but not well known by the general public. In fact, the public is told there are no benefits or only benefits to the developer of the crop. In reality, there are clearly established and documented agronomic, environmental and health benefits from the crops on the market today.

The National Academy of Sciences report showed a number of benefits. For example, it cited the advantages of Bt cotton, which requires dramatically less pesticide than its isogenic counterpart. The report concluded that the product causes a reduction in the use of chemical pesticides, which lead to greater human health benefits.

In the 1980s, the EPA was lobbied by environmental groups to

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Zeolite: A Unique Mineral

What is zeolite?

Zeolite is a mined mineral product that comes from southern Texas and is marketed by ILC. The mined ore is composed of the zeolite mineral clinoptilolite and lesser amounts of montmorillonite clay. Zeolites are naturally occurring aluminosilicates. They're characterized by high surface areas and high cation exchange capacities that result from the porous nature of the zeolite crystals. The unique, three-dimensional cage-like structure of zeolites has led to their use as molecular sieves, moisture absorbents, filtration and absorption of selected ions from wastewater, and as a carrier for many chemical compounds. The surface area of one-half pound of ILC marketed zeolite product is equivalent to the area of an entire football field.

How was it formed?

Approximately 40 million years ago volcanic eruptions sent thick clouds of ash, aluminosilicates of alkaline and alkaline earths, over the south Texas coastal area. Some of the wind borne ash settled to form thick ash beds. In some cases the ash fell into lakes and in others, water percolated through the ash beds. In all cases, the chemical reaction of the volcanic ash and the salt water resulted in a chemically and mineralogically altered product: the porous zeolite mineral.

How is it processed?

Zeolite mineral ore is extracted from the ground, crushed through a jaw crusher and screened to remove the smaller particles. The oversized product is further processed via a hammer mill in a closed circuit crushing operation. The crushed product is then screened to yield the various particle sizes needed. Any oversized material is recirculated for further size reduction. Products requiring low moisture content are dried in a rotary hot air drier to remove moisture, fine particles and dust. After a final screening, the dry and dust free product is stored for delivery.

How is it used?

This unique mineral product has a myriad of different uses ranging from animal feed application to waste water treatment. The use of zeolites in animal feeds is widespread in Europe and Southeast Asia where it is an aflatoxin binder or used to decrease the incidence of loose stools or scours.

Zeobrite 40 (trade name for the ILC marketed zeolite product) is approved as an anti-caking agent in animal feeds under the FDA "Generally Recognized as Safe" (GRAS) regulations. This product is a hydrated sodium aluminosilicate to be used at a level not exceeding 2% in feeds (10-20 lbs/ton). The FDA has not approved Zeobrite 40 for medicinal or other purposes. Thus, no claims can be made with regards to toxin binding or improved performance. However, university research has shown its efficacy in reducing the effects of aflatoxins and the corresponding improvement in performance.

Zeolites also have applications ranging from environmental to kitty litter.

The environmental uses primarily address the high ion exchange capacity of zeolite, which is compatible with many toxic and heavy metals. Physical encapsulation can take place within the intercrystalline pore space.

In reference to the absorbent properties as a kitty litter, zeolite absorbs up to five times the urinary ammonia odor as other litters. The

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product's snow-white color allows cat owners to watch for blood-tinted urine in the litter box for early prognosis and treatment of cystitis. Feline Urological Syndrome (cystitis) is one of the most common health problems affecting cats today. Zeolite also can be used as horse stall bedding or as an oil absorbent

Zeolites are a very unique mineral with multiple applications. If you have any questions regarding the use of Zebrite 40 in animal feeds, please contact your Iowa Limestone representative or email info@iowalimestone.com.

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remove chemical pesticides from the market. Then in the 1990s the same groups were lobbying against the use of biotech crops, which would lead to a reduction in the use of the same chemical pesticides.

There is actual harm to health and the environment

Abramson reports that in the past 14 years of intensive governmental, academic and commercial scrutiny, "Not a single incident of actual harm to health, safety or the environment has ever been documented concerning the crops on the market today."

Abramson's assertions about safety include Bt corn products. He said field studies show absolutely no adverse effects from Bt corn on monarch butterflies. "I'm not talking about lab studies where the monarch larvae have been stuck in Bt pollen in laboratories. I'm talking about in the field under real-world conditions." Instead, loss of habitat and chemical sprays are greater threats to the monarch butterfly population.

However, environmental groups have filed suit against the EPA on behalf of monarch butterflies. One suit — which used "junk science" to support its claims — was dropped shortly after EPA responded to its allegations with facts.

Commentary from ILC

A great deal of the misconceptions concerning biotech crops are propagated by the "junk science" that the environmental groups tend to use to support the cause. We as a society fear change, and biotechnology is certainly a move from the status quo.

Genetically modifying plants has gone on for centuries via traditional plant breeding. Biotechnology simply speeds the process up by allowing the insertion of one gene or trait. In traditional plant breeding we pass on several genes, not just the one we want. So you have to take the good with the bad. Biotechnology allows us to enhance plants while limiting the undesirable traits, thus speeding up the generation interval.

Tremendous advances have been and are still being made in this field. I hope that we can look past the fear factor, and see the good to come from this technology.