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Market Report	Yr Ago	4 Wks Ago	9/24/10
Livestock and Products, Weekly Average			
Nebraska Slaughter Steers, 35-65% Choice, Live Weight	$83.06	$99.17	$98.11
Nebraska Feeder Steers, Med. & Large Frame, 550-600 lb.	114.10	133.87	123.51
Nebraska Feeder Steers, Med. & Large Frame 750-800 lb.	99.33	118.45	111.44
Choice Boxed Beef, 600-750 lb. Carcass	140.48	163.79	157.60
Western Corn Belt Base Hog Price Carcass, Negotiated	49.42	79.14	80.84
Feeder Pigs, National Direct 50 lbs, FOB	40.00	*	*
Pork Carcass Cutout, 185 lb. Carcass, 51-52% Lean	54.98	94.99	90.80
Slaughter Lambs, Ch. & Pr., Heavy, Wooled, South Dakota, Direct	95.12	140.00	144.87
National Carcass Lamb Cutout, FOB	247.36	304.41	333.25
Crops, Daily Spot Prices			
Wheat, No. 1, H.W. Imperial, bu.	3.59	5.40	5.88
Corn, No. 2, Yellow Omaha, bu.	3.27	3.81	4.67
Soybeans, No. 1, Yellow Omaha, bu.	8.94	10.13	11.00
Grain Sorghum, No. 2, Yellow Dorchester, cwt.	4.98	6.75	8.25
Oats, No. 2, Heavy Minneapolis, MN , bu.	2.13	2.64	3.22
Feed			
Alfalfa, Large Square Bales, Good to Premium, RFV 160-185 Northeast Nebraska, ton.	*	135.00	*
Alfalfa, Large Rounds, Good Platte Valley, ton.	82.50	75.00	82.50
Grass Hay, Large Rounds, Premium Nebraska, ton.	*	95.00	*
Dried Distillers Grains, 10% Moisture, Nebraska Average.	90.50	105.00	125.00
Wet Distillers Grains, 65-70% Moisture, Nebraska Average.	35.62	38.00	47.00

*No Market

One of the most intriguing attributes of modern industrial society is its approach to nutrition. Humanity has moved from subsistence economies, where eating was a matter of survival, to economies characterized by the existence of an ever increasing variety of food products. An important recent addition to the types of food products included in our diet has been that of genetically modified (GM) products.

Despite their important agronomic benefits to agricultural producers (e.g., increased yields and/or reduced input costs), GM products have been facing a rather strong consumer opposition. Fears related to potential health and environmental effects of genetic modification, as well as moral and philosophical concerns, have consistently been cited as the driving forces behind the expressed consumer aversion to GM products. This consumer opposition varies significantly between countries, and so does the countries' regulatory response to products of biotechnology. For instance, while the United States, the world leader in GM production, treats biotech products as substantially equivalent to their conventional counterparts and does not require their segregation and labeling, the European Union (EU), based on its "precautionary principle" and consumers' "right to know," has instituted a mandatory labeling regime that is regarded as the strictest in the world.

Consumer opposition to GM products (GMPs) is strongest in the EU, where intriguingly, consumer confidence in the food safety and inspection systems is among the lowest in the developed world. This lack of trust is thought to originate, at least in part, from recent food safety scares like the Bovine Spongiform

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Encephalopathy (BSE, also known as Mad Cow Disease) incidents in the United Kingdom, the Foot and Mouth disease and the dioxin contamination of poultry in Belgium. While the EU appears to have made food safety a top priority through its new integrated "farm to fork" food safety approach, restoration of consumer confidence should be expected to, at best, be gradual. This is particularly important for GM products, where the lack of conclusive scientific evidence on their long-term health and environmental impacts introduces an element of uncertainty. When combined with a low confidence in the food safety and inspection systems, it can help rationalize the often viewed as irrational consumer fears.

Apparently, the focus of the first-generation GM products on conferring agronomic benefits to producers (while providing no perceived advantages to consumers) did little to promote the market acceptance of these products. Consumer opposition to GM products is expected to decrease with the introduction of second-generation GM products however. Many of these new GM products are close to their commercialization stage, and focus on providing direct consumer benefits by enhancing the quality of a product. Important examples of these consumer-oriented, second-generation GM products include the vitamin A enriched rice and maize (also known as golden rice and golden maize), high protein wheat and high-oleic soybeans.

Previous research in the Department of Agricultural Economics at the University of Nebraska-Lincoln, analyzed the market and welfare impacts of the introduction of these consumer-oriented GM products into the food system of countries that, like the U.S., do not require segregation and labeling of the first-generation, producer-oriented GM products (see Giannakas and Yiannaka (2008)). Recent research of ours published in the latest issue of the *Journal of Agricultural Economics* has focused on determining the market and welfare effects of the introduction of these new GM products in markets that (like the EU, Australia, Brazil, China, Japan, New Zealand, Russia, Saudi Arabia and South Korea) mandate the segregation and labeling of the first-generation GM products.

In particular, our study determined the effects of the introduction of labeled second-generation, consumer-oriented GM products on the markets of organic, conventional and GM food products, and identified the winners and the losers from their introduction into the agri-food system. To our knowledge, this study represents the first attempt to systematically analyze the economic effects of the introduction of consumer-oriented GM products in markets that have a mandatory labeling regime governing the products of biotechnology.

A key finding of our research is that, no matter the labeling regime governing the first-generation GM products, the effects of the introduction of the new GMPs on the quantities, market shares and the relationship between the different products are the same. In particular, the introduction of the second-generation, consumer-oriented GMPs, (a) drives the first-generation, producer-oriented GMPs that share the same agronomic characteristics out of the market; and (b) can change the nature of the relationship between the GM products and their conventional and organic counterparts from vertical to horizontal product differentiation. For the consumer- and producer-oriented GMPs to co-exist in the market, the two products should have different agronomic characteristics.

The effect of the new GMPs on the markets for conventional, GM and organic products was found to be case-specific and dependent on: (1) the consumer valuation of the quality-enhancing attribute of the new GMP, (2) the level of consumer aversion to GMOs, (3) the strength of consumer preference for organic products, and (4) the production costs and marketing margins in the different supply channels. The greater the consumer valuation of the new GMP, V, the greater the share of consumers attracted to the new product and the lower the market shares of its conventional and organic counterparts.

When V exceeds a critical value (determined in our study), the new GM product drives both the first-generation GM and the conventional product out of the market and co-exists with the organic product. When V is very high, then the introduction of the consumer-oriented GMPs drives out all three substitutes (i.e., first-generation GM, conventional and organic products), and dominates the market.

While the policy on the labeling of the first-generation GMPs does not affect the general market effects of the second-generation GMPs, it does affect their welfare implications – i.e., their effect on consumer and producer welfare. In particular, when the new GMPs enter in markets that, like the EU, mandate the labeling of the first-generation GM products and end up co-existing with their conventional and organic

counterparts, then: (a) producers of GM products and consumers of conventional and organic products gain, (b) producers of conventional and organic products lose, and (c) consumers of the GM product may gain or lose depending on their aversion to GMOs, the value they place on the new GMP and the price of this new product.

When the new GMPs drive the first-generation GM and conventional products out of the market, (a) all consumers and those producers that switch to the new GMP gain, while (b) producers of the organic produce lose. Finally, when the new GMP dominates the market, (a) all consumers and previous producers of GM and conventional products gain, while (b) some relatively inefficient previous organic producers lose.

The results that, (1) some GM consumers may lose and (2) producers of the conventional product always lose from the introduction of the new GMPs when these new products end up co-existing with their conventional and organic counterparts, are in sharp contrast with previous findings. These findings showed that all GM product consumers gain, and producers of the conventional product can benefit from the introduction of the new GMPs when those enter in a country that, like the U.S., does not label its products. The reason for the different effect of the new GMPs on the welfare of conventional producers is the reduction in the demand (and price) of the conventional product that occurs when the new GMPs enter a market that, like the EU, mandates the labeling of GM products. This is a very important finding of our study, since even though the GM market is currently miniscule in most of the countries with a labeling regime, conventional producers represent the vast majority of their agricultural producers.

Finally, it should be pointed out that the main results of our study are robust to different formulations of the consumer preferences for the quality-enhancing attribute of the consumer-oriented GMP, different agronomic characteristics of the second-generation GMPs and the absence of the first-generation GM products prior to the entry of the new GMPs. In this context, the important new insights on the economic effects of the new consumer-oriented GM products provided by our study should be of interest to policy makers, academics and all the participants in the conventional, GM and organic food supply channels.

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Lassoued R. and K. Giannakas. "Economic Effects of the Consumer-Oriented GM Products in Markets with a Labeling Regime." *Journal of Agricultural Economics* 61(2010): 499-526.

Giannakas K. and A. Yiannaka. "Market and Welfare Effects of the Second-Generation, Consumer-Oriented GM Products." *American Journal of Agricultural Economics* 90(2008): 152-171.

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