Legislative Services Agency

# FINAL REPORT

## Genetically Modified Organisms (GMOs) Study Committee

January 2006

### MEMBERS

Senator Thurman Gaskill, Co-chairperson
Senator Thomas Rielly, Co-chairperson
Senator Joe Bolkcom
Senator Thomas Courtney
Senator David Johnson
Senator David Miller

Representative Sandra Greiner, Co-chairperson
Representative Betty De Boef
Representative Dolores Mertz
Representative Doug Struyk
Representative John Whitaker

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### AUTHORIZATION AND APPOINTMENT

The Legislative Council established the Genetically Modified Organisms (GMOs) Study Committee in 2005 and authorized the Committee to meet for two days. The Committee's charge is to "review issues regarding the use of genetically modified organisms in agricultural production."

# I. Committee Proceedings.

The Committee was authorized to meet two days and held the meetings on October 21 and December 15, 2005.

## A. October 21st Meeting -- Testimony and Discussion.

**Sustainable Agriculture.** Dr. Fred Kirschenmann, Director of the Leopold Center for Sustainable Agriculture, Iowa State University, stated that the Leopold Center does not engage in research involving transgenic modifications because it is not consistent with the center's mandate to reduce the socioeconomic impacts of agriculture affecting farmers. He discussed questions regarding the impacts upon the environment of using transgenic technologies, and cautioned Committee members that new technologies may have unanticipated and destabilizing consequences, especially when they are rapidly introduced into the environment.

Dr. Kirschenmann noted that one effect of the use of transgenic modifications may be to further consolidate land holdings among fewer farmers. He also stressed that federal standards do not require that commodities be tested to ensure that they are free from transgenic contamination. He expressed concern that consumers may eventually reject food products which contain transgenic materials. Finally, Dr. Kirschenmann believes that farmers who produce organic crops or identity preserved crops may be losing markets to foreign competitors who produce crops free from contaminants. He stressed the need for farmers to cooperate and develop informal arrangements in order to reduce the risks of contamination associated with the production of transgenic crops. He also urged the Committee to consider a state initiative that would reimburse producers who suffer losses due to contamination from transgenic sources.

**Regulation and Approval of Transgenic Crops.** Ms. Robin Pruisner, State Entomologist, Department of Agriculture and Land Stewardship (DALS), and Dr. John Turner, Policy Coordinator Bio-technology Regulatory Services, United States Department of Agriculture (USDA), presented information. Ms. Pruisner briefly discussed the working relationship between DALS and the USDA. Dr. Turner discussed the regulation of transgenic crops by the USDA evaluating the potential risks to agriculture and the environment, the Food and Drug Administration (FDA) evaluating food and feed safety issues, and the Environmental Protection Agency (EPA) evaluating the effects on the environment from transgenic crops which produce pesticides. According to Dr. Turner, regulatory oversight must be proportionate to the risks. He explained that all field testing, importation, or interstate movement of regulated articles must be performed under USDA oversight. Dr. Turner stated that developers of transgenic crops must petition the USDA for "nonregulated" status as part of a process of comprehensive scientific review that must extend for at least 180 days. According to Dr. Turner, once a transgenic crop has achieved a nonregulated status, it is treated as any other crop. He noted that a more rigorous process occurs when a petition requests authorization for the approval of the production of a transgenic crop which produces a pharmaceutical or industrial compound.

Ms. Pruisner and Dr. Turner described the number of field test sites in Iowa. According to Ms. Pruisner, Iowa consistently ranks in the top three states having the most field test sites. They also discussed the process of notification review by state officials where field testing occurs with the opportunity for a state to concur or not concur with the USDA's approval. Dr. Turner discussed the

USDA's regulatory system with several Committee members. Senator Bolkcom discussed the testing of crops used to produce pharmaceutical or industrial compounds and the potential for pollen drift. Dr. Turner explained that there are no federal organic standards regulating genetically modified material.

**Perspectives From a Seed Business.** Mr. Bill Latham, President of Latham Seed Company, stated that Latham Seed Company is a family business which has been operating for many years and currently serves 450 dealers in six north central states. He noted that biotechnology is simply a tool that can be used for either positive or negative ends. He stated that decisions relating to the approval and use of transgenic crops has been made on the basis of sound science. Mr. Latham emphasized that the use of these crops has increased profitability to farmers, resulted in lower pesticide use, reduced greenhouse gas emissions, and increased food production. Mr. Latham also addressed organic crop production, and supported efforts by persons who produce food and feed to supply markets for nontransgenic crops. However, he stated that the real distinction is between regulated and nonregulated crops. Mr. Latham noted that the presence of trace amounts of commercially approved biotechnology enhanced seed in conventional seed lots is accepted in crop production and presents no risk to humans or the environment. He also stated that materials associated with approved transgenic crops are not "contaminants." He recognized the potential for commingling is present and emphasized that federal organic standards do not prohibit the presence of such material and cautioned that a "zero-tolerance policy" would be inappropriate. Mr. Latham and Co-chairperson Rielly discussed methods to ensure coexistence between producers of transgenic crops and producers of organic or identity-preserved crops.

**Perspectives From the Organic Farming Community**. Mr. Ron Rosmann, an organic farmer, discussed difficulties in producing organic crops given problems associated with pollen drift from neighboring farms that produce transgenic crops, and questioned the wisdom of growing transgenic crops used to produce pharmaceutical compounds in Iowa. He noted that there have been a number of legal settlements in cases involving contamination of organic and identity-preserved crops by transgenic crops. He believes that seed companies should be liable for losses resulting from contamination. Mr. Rosmann observed a trend toward consumer demand for value-added and identity-preserved foods, and believes that the state may lose its share of markets to countries like Brazil which restrict the production of transgenic crops. Mr. Rosmann emphasized the use of natural systems to control pests and increase yields, and stated that the use of biotechnology is radically different from the development of classical genetics. He urged the Committee to consider the establishment of programs which would better promote organic and identity-preserved grains and to compensate producers for losses associated with contamination. Mr. Rosmann also noted that research is no longer being directed toward improving conventional seed stock. Co-chairperson Greiner requested that Mr. Rosmann provide the Committee with recommendations for it to consider. Mr. Rosmann and Co-chairperson Greiner discussed grain standards and how organic grain is cleaned and tested under marketing agreements.

**Issues Facing Producers of Identity-Preserved and Organic Crops.** Mr. Ken Roseboro, Editor of the Non-GMO Report, stated that increasingly consumers are demanding a food production system that provides for the tracing of food to the farm, including a desire to purchase food that is labeled as organic, identity-preserved, or nontransgenic. He noted strict requirements in Europe and Japan reflect this concern. Mr. Roseboro discussed sources of contamination, including

transgenic seed, pollen drift from transgenic crops, and commingling of grain derived from transgenic crops during grain handling. Mr. Roseboro stated that finding nontransgenic seed research is becoming increasingly difficult. He also discussed the results of a study conducted by Iowa State University in which pollen drift was measured at 1,600 feet from its source. Mr. Roseboro discussed the history of transgenic production associated with Starlink, Prodigene, and Bt-10 corn. He stated that the greatest risk of contamination has occurred in fields located in the Midwest and especially in Iowa and Wisconsin. He discussed instances in several states, such as North Dakota and Vermont, where representatives of producers of transgenic crops and organic or identity-preserved crops met in order to develop strategies for coexistence, and in each case there was a stalemate.

Mr. Roseboro discussed a number of legislative initiatives which included "Farmer Protection Acts," which assigned liability for contamination to seed companies. He also mentioned the possible establishment of an indemnity fund which would be used to compensate producers for losses associated with contamination. Finally, Mr. Roseboro noted that European nations have imposed stricter regulations on the production of transgenic crops in order to ensure coexistence. Several Committee members had questions. Senator Bolkcom and Mr. Roseboro discussed the role of the federal government. Mr. Roseboro stated that consumers and businesses rather than the federal government are driving standards for food. Senator Bolkcom expressed the belief that the issue centers upon property rights. Senator Johnson and Mr. Roseboro discussed the role of sound science in this process.

**Issues Facing Producers of Transgenic Crops.** Mr. Doug Getter, Executive Director of the Iowa Biotechnology Association, briefly discussed the scientific history of biotechnology and its increasing use in the marketplace. Mr. Getter noted that private industry has invested substantial resources in order to develop varieties of crops which will benefit producers and consumers. He noted that biotechnology is important to feeding the earth's growing population. Mr. Getter also noted that the use of transgenic crops has reduced the application of pesticides and the emission of carbon dioxide. Mr. Getter noted that the United States has led scientific advances in the development and production of transgenic crops, noting that crops developed through biotechnology provide higher yields and increased farm income. He also stated that Iowa has led the nation in the production of these crops (1.08 billion pounds), and now has an international reputation as a center for agricultural biotechnology advances. He praised Iowa for its commitment to develop industries associated with biotechnology and believes that decision will improve the lives of Iowans.

## B. December 13th Meeting -- Testimony and Discussion.

**Legal Issues.** Dr. Drew L. Kershen, Earl Sneed Centennial Professor of Law, University of Oklahoma College of Law, presented testimony via the Iowa Communications Network concerning the following topics:

- **Prevalence of Transgenic Crops.** Dr. Kershen noted that transgenic crops account for the majority of soybean, corn, and canola grown in North America and have coexisted with conventional and organic crops without significant economic disruption or legal dispute. He referred to a study conducted in Australia which found a minimum (1 percent) presence of herbicide-resistant canola in non-herbicide-resistant planted fields.

- **Organic Standards.** Dr. Kershen discussed regulations addressing "adventitious presence" (unwanted material included in a crop, including transgenic material but also small quantities of weed seeds, seeds from other crops, dirt, insects, or foreign material such as plastic or stone). He noted that no farmer grows and harvests an absolutely pure crop, devoid of such impurities. Dr. Kershen described federal organic standards as "process based." Certification attests to an organic production operation's compliance with production standards and practices and the mere presence of a detectable residue of a product of excluded methods alone does not necessarily constitute a violation of this regulation. The test is whether an organic operation avoids the use of excluded methods and takes reasonable steps to avoid contact with the products derived from excluded methods as detailed in an approved organic system plan. Organic production regulations adopted by the European Union have specific thresholds for the unavoidable presence of transgenic materials (0.9 percent for labeling food as organic and 0.3 percent for selling seed as organic). The International Federation of Organic Agricultural Movements recognizes that there is no guarantee that organic products are 100 percent free from the adventitious presence of transgenic material.
- **Contractual Arrangements.** Dr. Kershen stated that if a producer voluntarily contracts to produce a crop which imposes requirements upon their production systems (above the legal minimum), in order to gain market or price advantage, the producer is responsible for ensuring those requirements are satisfied, understanding that adventitious presence can affect the terms of the contract, including premiums and market access.
- **Civil Liability.** Dr. Kershen stated that as of December 2005 there have been no lawsuits involving producers in which adventitious presence has been an issue. He discussed one successful lawsuit (the StarLink litigation) which related to an unapproved-for-food transgenic crop commingled into the food supply.
- **Discussion.** Dr. Kershen and Committee members discussed legislation in other states, including Vermont, California, and Hawaii, and the possible establishment of an indemnity fund to compensate producers for losses related to the presence of transgenic material in genetic or identity-preserved grain.

**Pollen Drift.** Dr. Mark Westgate, Professor, Department of Agronomy, Iowa State University College of Agriculture, provided testimony concerning the following topics:

- **Food Safety.** Dr. Westgate began by noting that adventitious presence is not a food safety concern, and discussed the federal government's system of coordinated regulation among the USDA, EPA, and FDA.
- **Modeling.** Dr. Westgate stated that pollen drift is a natural and predictable phenomenon in corn production. Models of pollen dispersal can provide producers with accurate management information in order to isolate nontransgenic crops from possible contamination. Dr. Westgate discussed a number of biological and physical factors, including topography, atmospheric conditions, and the nature of the source and receptive crops (pollen shed characteristics and floral synchrony). He described a research project in which white corn was planted in a neighboring field where yellow corn was planted in 2003 and 2004. In the test field of white corn, at 35 meters less than 0.9 percent of the seeds were yellow and at 100 meters less than 1 percent of the seeds were yellow.

- **Conclusions.** Dr. Westgate stated that it is impossible to ensure a zero tolerance standard. A number of barriers may be used to reduce adventitious presence, including physical structures, biology (sterility and terminator genes), mechanical techniques (detasseling and hand pollination), spatial practices (isolation distances), and temporal practices (delayed planting).
- **Discussion.** Dr. Westgate discussed issues relating to how atmospheric conditions affect pollen flow, consumer attitudes toward transgenic foods, and the impossibility of eliminating some level of adventitious presence.

**Separation Requirements and Recommendations.** Dr. Gregory Lamka, Quality Supply Technology Manager, Pioneer Hi-Bred Inc., provided testimony concerning the following topics:

- **Pollen Dispersal.** Dr. Lamka discussed corn pollen dispersal, noting that corn pollen is relatively heavy and rapidly falls out of the air. Rows of male plants must be planted in proximity to rows of female plants. In cases of abundant pollen shed, pollen can be transported some distance, die within a few hours of shed, or germinate within minutes of falling on a receptive silk (a silk is receptive for approximately six days).
- **Iowa Seed Production**. Dr. Lamka discussed the Association of Official Seed Certifying Agencies, which is a third-party organization involved in establishing minimum genetic standards and uniform certification procedures. Seed companies enter into agreements with producers subject to stringent conditions in which the companies furnish the seed stock for planting and the producers provide the land, equipment, and labor. A producer is responsible for providing the proper degree of isolation, including by making arrangements with their neighbors. A minimum of three field inspections must be performed by a representative of the certifying agency, and off-type plants must be destroyed (roguing).
- **Identity-Preserved Grain Production.** Dr. Lamka noted that seed crops are the original identity-preserved crops. Producers and seed companies are responsible for the isolation and other management practices needed to ensure that crops meet genetic standards, and crops used for seed production and for commercial grain have coexisted for decades. Dr. Lamka described a number of strategies to reduce adventitious presence, including selecting a large field, providing increased isolation distances, removing 12 to 16 border rows, cleaning equipment, planting high-quality seed, avoiding planting the same crop two consecutive years, and keeping adequate records.
- **Discussion.** Dr. Lamka and Committee members discussed management practices, contract requirements, and the possibility of creating a state indemnity fund to compensate producers for losses associated with transgenic contamination.

**Producer Management Practices.** A panel of producers who grow both conventional (nontransgenic) and transgenic crops discussed how they manage their crops to achieve coexistence. The panel included (1) Mr. James David Petersen, who produces transgenic crops, conventional crops, and organic crops; (2) Mr. Bill Horan, who produces transgenic crops which are not approved as food and may be used in pharmaceutical products, and conventional crops; and (3) Mr. Franco Owens, who produces transgenic crops and conventional crops. The three gentlemen provided the following testimony:

- **Operations.** Mr. Petersen, Mr. Horan, and Mr. Owens described their operations. Mr. Petersen stated that he raises both livestock and crops, including hay, oats, soybeans, and corn. He stated that he began transitioning to organic production in 2003, and in 2005 harvested conventional corn, conventional soybeans, Bt corn, Roundup Ready soybeans, organic corn, and organic soybeans. The three panelists described their management practices. Mr. Petersen emphasized the intensive use of labor, time, and equipment to control weeds (e.g., cultivating a field). Mr. Petersen also discussed premiums that he received for production of organic crops, which has allowed him to diversify. Mr. Horan described the special challenges confronting a producer engaged in the production of a crop such as corn, tobacco, or barley which is used in the manufacture of pharmaceuticals and requires special federal approval and oversight. Mr. Horan discussed his contractual relationship with Meristem Therapeutics, a French biotechnology company. He discussed production of a special variety of corn to manufacture a human enzyme, lipase, used in treating cystic fibrosis.
- **Discussion.** Mr. Petersen, Mr. Horan, and Mr. Owens discussed a number of issues with members of the Committee. Some of the discussion involved the recognized value of the "skills set" possessed by Iowa and other Midwestern farmers able to efficiently produce crops, including biotechnological crops used in the manufacture of pharmaceutical products. Mr. Horan noted that producers who traditionally possess this specialized managerial ability may be able to prosper by growing these new transgenic crops on relatively small farms. He also discussed how rural regions of the state might be revitalized by local farmers producing profitable crops used in manufacturing. Mr. Petersen discussed the expanding markets for organic food and the premiums that he has received for producing organic commodities. Panel members discussed proposals for the creation of an indemnify fund. Mr. Horan expressed support for the idea in concept.

## II. Committee Discussion and Action.

Committee members noted that Iowa agriculture is in a state of transition, and discussed the importance of revitalizing rural Iowa and assisting farmers in increasing their markets. Senator Bolkcom expressed support for a Committee recommendation to expand the Grain Depositors and Sellers Indemnity Fund created in Iowa Code § 203D.3 to cover losses associated with adventitious presence. Members discussed the fund, its ending balance, and contributions made by producers. Co-chairperson Greiner and Senator Miller stated that they were not prepared to make recommendations at this time, but that issues involving transgenic crops could be revisited during the 2006 Legislative Session.

## III. Materials Filed With the Legislative Services Agency.

**A. Internet Access.** The materials distributed in connection with the meeting are on file with the Legislative Services Agency and may be accessed on the Internet at:

http://www.legis.state.ia.us/aspx/Committees/Committee.aspx?id=71.

**B. Materials and Handouts.** The following list of materials and handouts was made available to the members of the Committee:

**1.** Materials submitted by the Legislative Services Agency, including all of the following:

- Tentative Agenda, October 21, 2005.

- Proposed Committee Rules.
- Committee Charge.

**2.** Committee Charge, Legislative Services Agency.

**3.** Written Testimony of Dr. Fred Kirschenmann.

**4.** Handout submitted by Dr. Kirschenmann -- *Does Planting GMO Seed Boost Farmers' Profits?* authored by Mr. Mike Duffy and Mr. Matt Ernst.

**5.** Handout submitted by Ms. Robin Pruisner -- *Number of Biotech Field Test Sites*.

**6.** PowerPoint presentation submitted by Dr. John Turner -- *Regulation of Products of Agricultural Biotechnology in the United States: Role of the U.S.D.A.*

**7.** Handouts submitted by Mr. Bill Latham -- American Seed Trade Association News Releases, including all of the following:

- *A Seed Industry Response to Issues Raised by the Presence of Biotech Seed in Conventional Seed Lots* -- July 8, 2004.
- *A US Perspective on GM Cultivation and Labeling* -- March 9, 2004.
- *Position Statement on Intellectual Property Rights for the Seed Industry* -- July 15, 2004.
- *ASTA Comments on Vermont Senate Bill S.18* -- February 18, 2004.
- *Put Seed Costs in Perspective,* authored by Andrew Burchett, Farm Journal, November 2005.

**8.** Written Testimony of Mr. Ron Rosmann.

**9.** PowerPoint presentation (on Compact Disc) submitted by Mr. Ken Roseboro -- *GMO Issues Facing Producers of Identity Preserved, Non-GMO, and Organic Crops.*

**10.** Written Testimony of Mr. Doug Getter.

**11.** Handouts submitted by Mr. Getter, including all of the following:

- *GM Crops: The Global Economic & Environmental Impact -- The First Nine Years 1996-2004*.
- *Global Status of Commercialized Biotech/GM Crops: 2004*.
- *Impacts on U.S. Agriculture of Biotechnology-Derived Crops Planted in 2003, an Update of 11 Case Studies.*
- *The Economic Status & Performance of Plant Biotechnology in 2003: Adoption, Research and Development in the United States*.
- Organics & Biotechnological Agricultural Methods, United States Department of Agriculture letter.
- *Suggested Best Management Practices for the Coexistence of Organic, Biotech and Conventional Crop Production Systems*.
- *Co-existence of GM and non GM Crops: Current Experience and Key Principles*.
- NU Research: *Feeding, Grazing GM Corn Doesn't Affect Livestock Performance*, published in Farm & Ranch Guide (February 6, 2004).

- *Crockumentary*, Fox News.Com.
- *Food for Thought*, Wall Street Journal (October 14, 2005).
- *DNA: You Can Eat, A Student's Guide to Project SEMI,* Heartland Area Education Agency.
- *Imagine: A Bioscience Career,* Iowa Biotechnology Association.
- *Iowa BioHistory,* Iowa Biotechnology Association.

**12. Handouts submitted by Senator Joe Bolkcom, including all of the following:**

- A list of organic food producers, seed companies, and merchants by city and county of operation and product.
- *Organic Food Producers Lose Ground to Imports: Market Has Been Seen as a Niche for Small U.S. Farms*, by Mr. Philip Brasher, Des Moines Register (October 8, 2005).
- Organic Agriculture in Iowa and U.S. fact sheet.

**13.** Materials submitted by the Legislative Services Agency, including all of the following:

- Tentative Agenda, December 13, 2005.
- Draft of the October 21st Committee minutes.

**14.** Written Testimony (PowerPoint Presentation) of Dr. Drew L. Kershen.

**15.** Handouts submitted by Dr. Kershen, including all of the following:

- *Adventitious Presence*, CAST Commentary authored by Dr. Kershen and Mr. Alan McHughen (July 2005).
- *Proposed Liability for Transgenic Crops*, Dr. Kershen.

**16.** PowerPoint Presentation submitted by Dr. Mark Westgate -- *Growing Genetically Engineered (GE) and Conventional Crops Side by Side*.

**17.** Written Testimony (PowerPoint Presentation) of Dr. Gregory Lamka -- *Separation Requirements and Recommendations.*

**18.** Handout submitted by Dr. Lamka -- *Environmental and Production Benefits Drive Greater Demand for Biotech Crops*, a press release issued by the National Center of Food and Agriculture Policy, December 6, 2005.

**19.** PowerPoint Presentation submitted by Mr. Jim Petersen.

**20.** Written Testimony (PowerPoint Presentation) of Mr. Bill Horan -- *IOWA Fields of Opportunity.*

**21.** Copy of Iowa Code Chapter 203D (Grain Depositors and Sellers Indemnification) submitted by Representative Whitaker.

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