

GMO Regulations: Biofuels and Bioenergy Crops

Drew L. Kershen
Earl Sneed Centennial Professor of Law
University of Oklahoma
Technical Advisory Committee of the Biomass
Research and Development Board
August 23, 2011

Introductory Theme

- ◎ “As current regulatory burdens affecting the commercialization of emerging biofuel innovations are disproportionate to the harms they are intended to mitigate, regulatory innovation is needed to address the unjustified burdens.”
Timothy Slating & Jay Kesan, Making Regulatory Innovation Keep Pace with Technological Innovation, *Wisconsin Law Review*, forthcoming 2012

GM Bioenergy Crops: Fundamental Points

NAS WHITE PAPER 1987

- ◉ DNA techniques show no evidence of unique hazards
- ◉ Risks are the same in kind with transgenic organisms
- ◉ Risk assessment on the basis of the organism and the environment, independent of the method

NRC REPORT 1989

- ◉ Transgenic crops pose risks no different from crops modified by classical genetic methods
- ◉ rDNA technique allows more precise definition of function, sequence, and phenotype expression
- ◉ Process is not a useful criterion for regulatory oversight
- ◉ Product of genetic modification should be the focus, not the process

GM Bioenergy Crops: The Hope and The Reality

HOPE

- Steven Strauss, et al., Far Reaching Deleterious Impacts of Regulations, BioScience (2010) 60(9): 730 –Table 1 on GE traits under development for perennial biofuel crops
- Aug. 11, 2011– “Synthetic Genomics plan to genetically engineer algae cells to improve the cells’ ability in converting water, carbon dioxide and sunlight into oil.
- Syngenta Enogen (amylase) corn on 5000 Kansas acres – 10 % mix is 10% production increase

REALITY

- Steven Strauss, et al., Far Reaching Deleterious Impacts of Regulations, BioScience (2010) 60(9): 729-741
 - Box 1: Death of a Poplar Trees Research Program
 - Box 2: Switchgrass breeding intractable under current regs
- Nina Fedoroff (+65) to EPA Admin. Lisa Jackson – EPA expanding regulatory purview; Regulators need to stop regulating modifications for which there is no scientifically credible evidence of harm.

GM Bioenergy Crops: Consequences

THE BAD

- ◉ GM is off the table as an innovative method for research and commercialization
 - Not an attack on classical breeding, including marker assisted breeding
- ◉ Breed around regulations
 - Scott's Kentucky bluegrass
 - Pioneer Seed Production Tech
 - ARS FasTrack plums
 - Zinc-finger and TALE nucleases

THE UGLY

- ◉ Off-shore research
- ◉ Brazil – GM sugar cane w/ 22% yield increase – 10 yrs.
- ◉ Create crops with greater hazards avoidable by GM
 - Domestication (grasses)
 - Toxic oilseed (jatropha and castor bean)
 - Methyl bromide emitting oilseed rape
- ◉ Domestic lost opportunity costs

GM Bioenergy Crops: Suggestions

- ◉ Rethink the policy – return to the Fundamental Points – stop regulating when no scientifically credible harms – regulate like other breeding methods
- ◉ Refocus the present regulatory approach
 - Categorical exemptions – make the exemptions so that there is no “significant federal action”
 - Tiered risk approach that looks at product and builds in familiarity
 - Abandon zero tolerance attitude and standards – adopt low level presence that allows field trials and commercial release -
- avoid unreasonable containment and coexistence
- ◉ Defend agricultural biotechnology in domestic and international fora and through the World Trade Organization, both laws and standards

Thank you for the opportunity to speak to you. I will be pleased to take questions and engage in discussion. I will be pleased to answer questions in future contacts. dkershen@ou.edu