

Entrepreneurial and Organizational Responses to Biotechnology Innovation

*Submitted by Peter G. Klein, Michael E. Sykuta, Michael L. Cook, and David J. O'Brien,
University of Missouri*

Klein: kleinp@missouri.edu
Sykuta: sykutam@missouri.edu
Cook: cookml@missouri.edu
O'Brien: obriendj@missouri.edu

IMBA Project 2007-10 **Project Description**

Objectives:

The objective of this project is to better understand the adoption and diffusion of biotechnological innovations, with a focus on second-generation biotechnology. Our specific objectives are:

1. To provide a systematic, comprehensive account of the organizational adaptations that facilitated the adoption of first-generation biotechnology.
2. To acquire detailed information on cases of successful and unsuccessful second-generation adoption.
3. To formulate a general theory or conceptual model of the entrepreneurial and organizational challenges facing adopters of second-generation biotechnology, focusing on mechanisms by which supply-chain participants can capture some of the end-consumer value created by these technologies.
4. To provide policymakers and market participants with recommendations for improving the process of adoption and diffusion.

Procedures:

The research will analyze the adoption and diffusion of first- and second-generation traits. The first step will be a comprehensive literature review and compilation of available secondary data on the impact of biogenetics on the agrifood supply chain. That will be followed by a series of detailed case studies and by the development of implications for food-sector participants and policymakers. Specific activities are:

1. Review available theoretical and empirical literature on agricultural biotechnology adoption and diffusion.
2. Compile and analyze existing secondary data on the commercialization of first-generation (and, if available, second-generation) traits.
3. Use secondary data to identify in Missouri and Illinois sets of relatively successful and unsuccessful efforts to create second-generation biotechnology organizations and develop operational indicators for measuring varying degrees of success in organizational development.
4. Develop and deploy a survey instrument for additional examination and develop an outline for a set of research cases using primary data. The precise research design will depend on the results of the analysis described in steps 1-3 above. One possibility is a quasi-experimental research design that matches two more successful (one in Illinois and one in Missouri) and two less successful (one in Illinois and one in Missouri) second-generation biotech organizational efforts, with matching based on other possible confounding variables such as demographic and economic characteristics of the local communities and regions within which they operate.
5. Write a proposal for major external funding to deploy one or more surveys of key actors in the cases described above.

Impact

This research will identify existing network and organizational characteristics that impede or facilitate Missouri and Illinois agricultural producers' adoption of second-generation biotechnology.

Identifying ways that supply-chain participants (firms, trade associations, producer cooperatives) can create more effective network bridges that facilitate adoption of second-generation biotechnology should lead to commercialization of more second-generation products that has been realized to date.

The knowledge gained from practical case-study materials should assist rural Missouri and Illinois communities in incorporating strategies for attracting second-generation biotechnology ventures.