The Biotechnology and Social Issues in Rural Agricultural Communities Workshop Group considered a number of issues with respect to the impact of biotechnology upon producers as well as communities, with a focus on the possible long term ramifications of this technology. Participants had a difficult time focusing on possible outcomes, since biotechnology and its potential impact is caught up in a plethora of change in farms and communities which have multiple causes. For example, farm structure change, with the disappearing middle-sized farm and reduction of the number of family farms, is ongoing and may also be increased with adoption of biotechnology as part of an industrial agriculture model.

There was no obvious consensus that biotechnology was, or was not, any different that any other technology. Biotechnology is another development in the trend of technologies. However, participants perceived that ambiguity about the future of agriculture is impeding both producer adoption and public acceptance of new products from biotechnology. A better understanding is needed of economic and societal trade-offs based on full cost accounting of benefits and costs. Involvement of producers and communities in the early stages of communication and education initiatives would be desirable. This process must be truly consultative with adequate resources for both sides of the debate.

Some of the problems, such as gene drift and genetics ‘technology use’ (i.e. Monsanto) contracts, may pose a liability that should be clearly defined and may present new agronomic and social stresses compared to the adoption of traditional technologies. Scientific experimentation has not focused adequately on these problems.
**Producer Issues**

A number of factors were identified as the most important producer concerns with new agricultural biotechnology products, including:

- Timely access to a range of technologies is key to competitiveness and reducing environmental impacts.
- Product efficacy concerns will require that producers work with extension to evaluate new products under their particular production systems.
- Farm safety and environmental impact with respect to agricultural biotechnology products should be considered by regulators. It was suggested that these impacts may be analogous to but qualitatively different from crop chemical safety.
- There should be a sharing of risks and liabilities through stringent contract and technology use agreements. What portion of the liabilities will rest with the producer and what will the agricultural impact indicate? Additional information will be required on technology use agreements. Producers are concerned that they will become “renters” of proprietary germplasm and information, rather than relying on local knowledge and experience.
- Options for different production systems would be appreciated by producers. For example, additional research on both organic agriculture and biotechnology is desirable for sustainable agriculture systems.
- Producers require access to peer-reviewed unbiased science-based information via a public extension service. This will require additional resources to provide an expanded service. Knowledge transfer to farm with respect to biotechnology is slow due to complexity and lack of a focused effort in information flow.
- Direct contact and liaison with university and research community by producers would assist in developing mechanisms for identifying research needs. There was some concern that producers have insufficient capital to be influential.

**Community Issues**

A number of points were identified with respect to public needs and concerns. These are:

- Public concern over the safety of biotechnology-based food products and a need for assurance of food quality with respect to biotechnology and industrial agriculture.
- Importance of knowing the limitations of science and public agriculture research.
• Impact of new technologies with respect to social networks within and beyond local agricultural communities. Increasing dependence on new technologies, such as biotechnology, to gain competitive advantage may erode community loyalty and neighborliness.

• Impact on number of farms.

• There may be new realities and configurations for communities. Biotechnology contributes to a changing culture of agriculture which will make it more or less attractive to different people.

• Resource management issues such as stewardship and precision agriculture will affect rural communities.

• Relationships among researchers and rural communities may change. Research may increase, according to corporate need and sponsorship, rather than in the interest of farmers or rural communities.

It was pointed out that rural communities would require redefinition in an environment where research is decreasing and communities struggle with reduced transfer payments in health, education and road assistance, as well as challenges in adding value to commodities. There is also a concern that among this competition and specialization communities would lose the ability to organize for the common good and community development. Will communities focus on issues such as stewardship/land use, legislation for livestock enterprises, and the review of “neighboring” codes?

There is a concern that genetic engineering could be blamed for enhancing existing problems, for example, herbicide resistant weeds.

There appears to be doubts about the trustworthiness and reliability of the biotechnology industry, particularly with respect to food products, human health, and costs to consumers. This may be due to the link between government and industry in funding research. As a visible leading element in the application of high-tech to the production of food, biotechnology becomes a focus for broader concerns about a range of issues with respect to an industrialized model in agriculture. These include questions of control over productive resources, agenda setting, agriculture ethics, food quality, and health.

Recommendations

1. Appropriate public service agencies (Extension) should provide producers with access to information on production contracts and their possible implications.

2. Provide additional resources to public extension service in order that access to information and education can be provided on biotechnology. Producers must have access to peer-reviewed science-based information on the impact of biotechnology, organic agriculture, and other sustainable agriculture technologies on farms and rural communities.
3. Conduct case studies to provide information on how biotechnology, organic agriculture, and sustainable agriculture technologies are being used successfully on farms. Identify potential positive and negative implications for the industry and rural communities.

4. Establish ways to develop proprietary control over biotechnology to the mutual benefit of public and industry in order to ensure continued support for public research.

5. Reveal the potential gains and costs of biotechnology through systematic broad-based social impact assessments.

7. Evaluate field efficacy of biotechnology products as they are used at the farm level through allocation of a portion of public research funds.

8. Publicly fund research and surveys to establish the nature and extent of concern about agricultural biotechnology. Some of the participants did not support this view.