



# ECONOMICS COMMENTATOR

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## PRODUCER PERCEPTIONS OF RESEARCH NEEDS AND TRANSGENIC CROP ADOPTION IN SOUTH DAKOTA

**Evert Van der Sluis**

*Associate Professor of Economics*

**Angella Van Scharrel**

*Economist, State of South Dakota, Pierre*

In spring 2002, we conducted a survey among South Dakota crop producers to assess their attitudes towards agricultural biotechnology. We sent a questionnaire to 1,000 randomly selected corn and soybean farmers in the state and received 367 usable surveys

This is the second of two *Economics Commentator* articles based on this survey. Previously, we discussed the determinants of adopting or not adopting transgenic corn and soybeans at the farm level in the state, based on statistical analyses of the responses to objective questions made by the survey participants.

In this article, we report on a selected number of agricultural research needs, as viewed by the responding farmers. We also provide a descriptive summary of comments made by the responding corn and soybean farmers concerning the use of agricultural biotechnology in South Dakota. The information described here is non-conclusive in nature, and is provided in an effort to stimulate discussion.

### South Dakota Agricultural Research Needs

Survey participants were asked to judge the importance of a series of nine broad research priorities for the state. While not directly related to the primary concern of the survey – the use of agricultural biotechnology in South Dakota – the questions were included in the survey instrument to obtain a general indication of the perception among South Dakota crop farmers about research needs for improving agriculture in the state. While not a basis

for major policy shifts, the responses were sufficiently worthy of note to warrant a discussion.

The research priorities were listed at the end of the survey in the form of a selected number of predefined statements on technical topics. The respondents were asked to place a level of importance on each of nine statements associated with topics for investigation by South Dakota State University researchers. The nine statements were not mutually exclusive, and may be seen as a wish list of a limited number of research possibilities.

The respondents' opinions about the research priorities are listed in Table 1. Virtually all (at least 90%) of the respondents considered the first five items listed in the table medium to high priority research needs. In particular, the respondents placed high importance on conducting research on (1) low-cost technologies appropriate for mid-sized farms; (2) ways to help farmers diversify their operations; (3) ways to help young people get into farming; (4) more effective and safer chemical pesticides; and (5) non-chemical alternatives to pesticides.

A large majority (more than 80%) of the respondents also considered the next three items of a medium to high priority for investigation by SDSU researchers. These items were to conduct research on (1) ways to help livestock producers expand their operations; (2) better ways to use pasture on livestock farms; and (3) cutting-edge technologies for modern farming. The remaining item – developing better ways to manage livestock manure – was viewed by more than two-thirds of the respondents as a medium to high priority research topic.

An obvious, but important, caveat of the responses to these questions is that only nine research priorities were listed for consideration. As a result, some of the respondents suggested their own items of importance for investigation by SDSU researchers, including specific ways to enhance agricultural production.

Table 1: Research Priorities at South Dakota State University

Statement	Medium to high priority (%)	Number of respondents
Low-cost technologies appropriate for mid-sized farms	96.8	345
Ways to help farmers diversify their operations	95.6	343
Ways to help young people get into farming	94.5	346
More effective and safer chemical pesticides	93.7	350
Non-chemical alternatives to pesticides	90.3	341
Ways to help livestock producers expand operations	81.6	342
Better ways to use pasture on livestock farms	81.1	339
Cutting-edge technologies for modern farming	80.3	335
Better ways to manage livestock manure	70.6	337

Another limitation of the nine pre-determined hypothetical research needs is that the statements were somewhat technical in nature. This led some respondents to point out the need to investigate ways to improve farmers' lives by conducting non-production oriented research. This was summarized by one of the respondents, who stated that: "SDSU research and extension is becoming more and more irrelevant because SDSU is trying to do the same thing as private industry. However, the university is usually a few years behind. Farmers' decisions are based more on government policy, product marketing and credit issues rather than production research results. SDSU should look at ideas which would uniquely benefit [South Dakota] and which private industry would not do ...." Similar concerns were raised by another respondent, who stated that: "SDSU should do (and should have done) more to predict the effects of government policies and new technologies on the rural social structure, rather than just promote increased production."

### Farmer Comments about Agricultural Biotechnology

A major objective of the survey was to document the opinions among South Dakota corn and soybean producers about the use of modern biotechnology in agricultural production. Because statistical analyses of answers to a set of objective questions do not always capture the entire spectrum of issues and concerns among survey participants, the farmers

were able to make their own comments about the use of agricultural biotechnology in general.

Due to their qualitative – as opposed to quantitative – nature, the comments reported here could be viewed as no more than anecdotal evidence. However, the remarks serve to paint a more complete picture of farmers' opinions and attitudes regarding agricultural biotechnology than could be obtained only from quantitative analyses reported on in the previous *Economic Commentator* article.

Seventy-five individuals provided written comments, mostly related to agricultural biotechnology, and some to research needs reported above. For ease of discussion, we divide the respondents' comments into several categories: concerns about the farm economy; whether or not farmers have a choice to participate in agricultural biotechnology; the role of the agricultural input industry in influencing policies and in its relationship with universities; and segregation and labeling issues.

Several respondents revealed a striking sense of pessimism about the farm economy and the rapidly changing structure of agriculture in general. In particular, several individuals stated that small farms have difficulty remaining viable as the move towards large-scale production facilities continues. Several respondents expressed the view that agricultural biotechnology reinforces the move towards large-

scale production units, in that it would disproportionately benefit large over small farms.

Some respondents subscribe to a form of the “agricultural treadmill” theory. This theory holds that a new technology provides relatively large benefits to its first adopters, but as more and more farmers adopt the technology, product prices decline as a result of increased production made possible by the use of the new technology. The theory has elements of inevitability, in that downward product price pressures due to supply increases associated with technology improvements outweigh any price increases that might occur as a result of a demand increase. One respondent rhetorically asked: “If technology is used for increasing yields, doesn’t it basically work against us in the supply/demand market?” Another respondent commented that adopting agricultural biotechnology is inescapable for agricultural producers: “Resisting biotechnology may be the high road for humanity, but likely economic suicide for the farmer.”

Related to their sense of the inevitability of biotechnology applications becoming widely adopted in production agriculture, some respondents commented on the perceived role of input supply companies in the market place and in influencing policies pertaining to agricultural biotechnology. Several respondents stated that the extra costs of purchased inputs needed to plant transgenic varieties – such as those involved with technology fees charged by seed companies to farmers to recoup the costs associated with developing the new seeds – create additional financial burdens to agricultural producers and increase farmer dependence on input providers. A related issue is the view expressed by some respondents that the policy agenda is dominated by agribusiness firms that have a large stake in the technology, as opposed to democratically elected representatives of society at large. In the view of one of the respondents: “As much as I would like to see the return of the prosperity to small farms, we are in a global market due to the influences and aggressive actions by large corp[orations] ...”.

Several respondents expressed a sense of unease about the relationships between public universities and the agricultural input industry. This was reflected in the fact that only 46.1% of the survey respondents agreed or strongly agreed with the statement that: “South Dakota State University provides objective information on biotechnology.”

About an equal share (49.5%) of the respondents indicated not being certain, and the remainder (4.4%) disagreed with this statement. The apprehension about the university-industry relationship was also expressed in written comments by the respondents. One respondent stated: “The mindset and money accessibility of universities is too closely tied to big money from technology companies. It’s taking us down a very dangerous road.” Another respondent stated: “From a credibility standpoint, institutions such as SDSU must hold the cards. Biotechnology is a field that doesn’t lend itself well to ‘sound-bites.’ It requires an understanding of crop improvement history and what the goals – all the goals – of crop improvement are today, because biotechnology has so greatly expanded the things we can do with our crops. Somewhere in all this, we need to ask whether we are growing the right crops. Are there other crops that we could put to better use?”

The most important benefit of agricultural biotechnology cited in the written comments of the respondents was improved pest control. Also, convenience was cited as an advantage associated with transgenic crops. Some concern was expressed about consumer acceptance of products with genetically modified ingredients. Particularly strong concern was expressed about the impending availability of herbicide-tolerant wheat.

## **Concluding Comments**

In a survey on agricultural biotechnology in South Dakota, we elicited opinions of agricultural producers in the state about agricultural research needs for the state. Research oriented towards mid-sized farms, diversification, young farmers, safe pesticides and non-chemical alternatives to pesticides were listed as important needs. The respondents also cited social science-oriented research for emphasis by South Dakota State University researchers.

The written comments made by the agricultural producers suggest that many farmers have strong feelings about various aspects of agricultural biotechnology. While South Dakota farmers have been the biggest users of transgenic corn and soybeans in recent years, many expressed serious concern about the technology’s effects on ongoing structural changes taking place in agriculture, about the perceived lack of choice of whether or not to participate in agricultural biotechnology, about the influence of the agricultural input industry on public

policies and the public research agenda, and about segregation and labeling issues.

**For Further Reading**

Van Scharrel, Angella. "Determinants of South Dakota Farmers' Adoption of Genetically Modified Corn and Soybeans." South Dakota State University, Department of Economics, Masters Thesis, 2003.

<http://wwwlib.umi.com/cr/sdstate/fullcit?p1415411>

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Economics Department  
South Dakota State University  
Box 504 Scobey Hall  
Brookings, SD 57007-0895  
Phone: 605-688-4141  
Fax: 605-688-6386  
E-Mail: Penny\_Stover@sdstate.edu  
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SOUTH DAKOTA STATE UNIVERSITY  
Department of Economics  
Box 504  
Brookings SD 57007-0895

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