Attitudes Concerning Biotechnology

Results of a survey conducted by
The Kerr Center

For information regarding the survey format or the methodology adopted in arriving at the results presented, contact:

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Preface

The Kerr Center conducted a random survey in November 1999 to assess the existing level of awareness and knowledge among the public regarding the spread of biotechnology and genetically modified products. The Kerr Center's objective in conducting the survey was basically to get answers for questions about the spread of the new technology, and its impact on the farming communities, and then to circulate the results among the legislators and policy makers both at the Center and at the State level.

This report presents the results of this survey.

Key words

Biotechnology, genetically modified.

Acknowledgements

The Kerr Center would like to extend its appreciation to all those who participated in this survey by filling it out, and especially those who took the time to give us their comments and suggestions about the spread of biotechnology.

We also thank Dr. Shida Henneberry of Oklahoma State University, and Dr. Eric Wailes and Dr. Jennie Popp of University of Arkansas, for their cooperation in allowing us to conduct the survey during their classes.

Introduction

One of the newest developments in United States agriculture is the advent of biotechnology, which seems to be leading us into a sudden new biological revolution. Consumers and producers need to be aware of the advantages and disadvantages that genetically modified food products pose to human health and the environment. It is therefore necessary to educate them regarding biotechnology and genetically modified products, and to provide them with the skills to make decisions based on sound science. For this purpose it is important to assess the consumers and producers level of awareness about biotechnology, and for them to share their knowledge and views about the increasing spread of bio-engineered products.

The Kerr Center conducted a random survey in November, 1999 to assess the existing level of awareness and consciousness regarding bio-technological issues among the consumers and producers. The survey was designed to provide sound statistical results and conclusions. It is for this reason that we conducted an analysis of not only the overall agreement, disagreement, and indecision among those surveyed, but also did similar analysis for the different attitudes held by people among different age groups.

Survey questionnaires were sent all over the U.S. We mailed out a total of 3,343 surveys, and we received back 1,006 completed surveys. The response that we received was much beyond our expectations. 150 surveys were also conducted at the University of Arkansas, and at Oklahoma State University. Out of the total of 1156 survey responses received, 106 were from people below 20 years of age, 223 were from those in the age group of 20 to 40 years, 498 were from the 40 to 60 years age group, and 327 responses were from those over 60 years. Personal experiences regarding the impacts on human and animal health and on the environment have also been compiled and included in the report.

We feel that the results of this survey will be of great value in implementing future regulations and policies with regard to bio-engineered products, keeping in consideration not just the views of the farming communities, but also of the non-farming communities. This is possible with statistical results based on actual data and not simulated data. This project is designed to address these policy issues, so that efforts may be made in the future to equip producers and consumers of food with the required knowledge, enabling them to be in a position to critically weigh the various issues regarding genetically modified foods to make their own decisions.

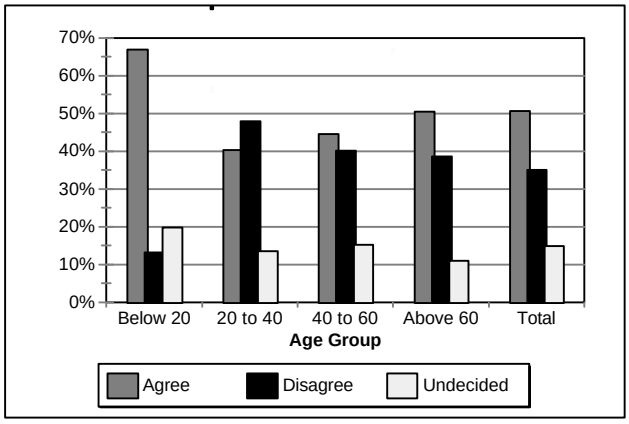
Analysis of Survey Results

Question # 1: *Today's food is safer than it has ever been?*

A perusal of Figure 1 shows that the majority of those surveyed below the age of 20 agree that today's food is safer then ever before. Among that group, 66.98% gave a positive answer to the question raised, 13.21% indicated negatively and 19.81% indicated their indecision on the issue.

While the agreement with the statement was varying among the age groups 40 to 60 years, and above 60 years, the only majority disagreement came from the people falling into the 20 to 40 year age group (40.36% answered positively, 47.98% answered negatively, and 13.45% were undecided).

Figure 1: Survey results for question # 1.

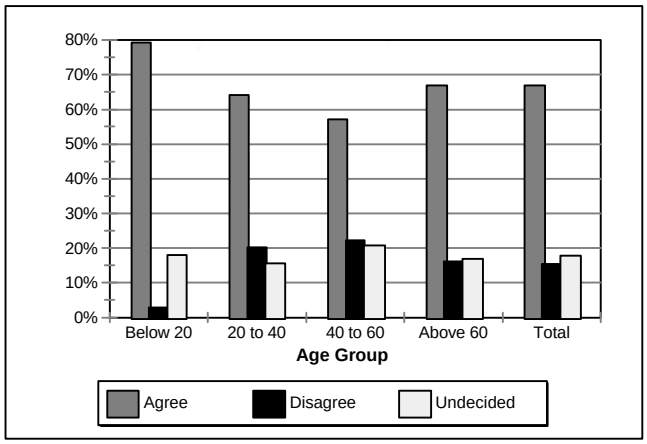


Question # 2: *Genetically modified seeds have increased the quantity of agricultural production?*

It is interesting to observe that there was a clearly defined consensus among all age groups that genetically modified seeds have increased the quantity of agricultural production. Positive answers were noted – 79.25% from the below 20 group, 64.13% from the 20 to 40 group, 57.03% from the 40 to 60 group, and 66.97% from the above 60 group.

Such a majority agreement (out of the 1156 surveys returned, 66.84% agreed that genetically modified seeds increased production, 15.38% disagreed and 17.78% indicated their indecision), raises the question as to whether the opinion is based on actual personal experiences or on hearsay.

Figure 2: Survey results for question # 2.

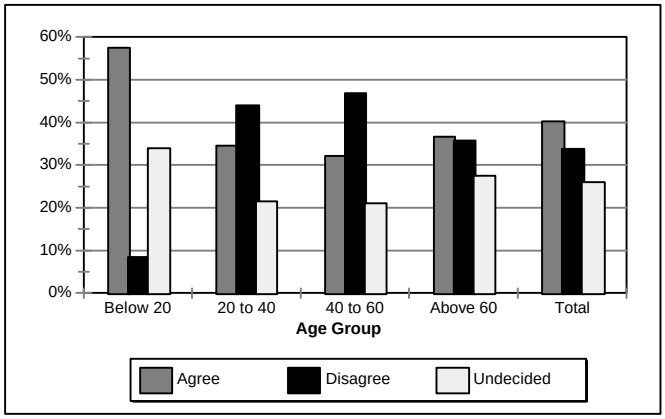


Question # 3: *Genetically modified seeds have increased the quality of agricultural production?*

There appears to be disagreement among the 20 to 40 years and the 40 to 60 years groups regarding a qualitative increase in agricultural production with the introduction of genetically modified seeds (43.95% of those in the 20 to 40 group, and 46.79% of those in the 40 to 60 age group expressed their negative opinion on this issue).

The total figures tilt towards a positive opinion (40.23% agree, 33.75% disagree, and 26.02% are undecided), mainly because of the perceptions expressed by the below 20 group (57.55% of those in the below 20 group agree with the question).

Figure 3: Survey results for question # 3.

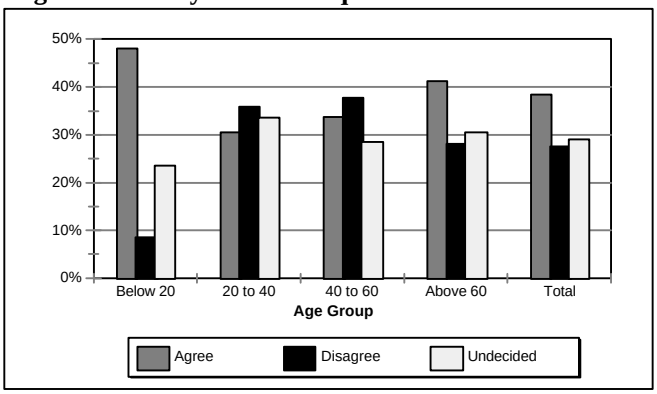


Question # 4: *Biotechnology is good for the environment?*

While the above 60 group and the below 20 group perceive biotechnology to be good for the environment (41.28% of those in the above 60 group and 48.11% of those in the below 20 group have marked a positive response to the question), the majority of those in the other groups (35.87% of those in the 20 to 40 age group, and 37.75% of those in the 40 to 60 age group) have indicated a negative response to the question.

The number of people in all age groups who are undecided about this issue (23.58% of those in the below 20 group, 33.63% in the 20 to 40 group, 28.51% in the 40 to 60 year group, and 30.58% of those in the above 60 age group) is also high when compared to the responses to the other questions.

Figure 4: Survey results for question # 4.

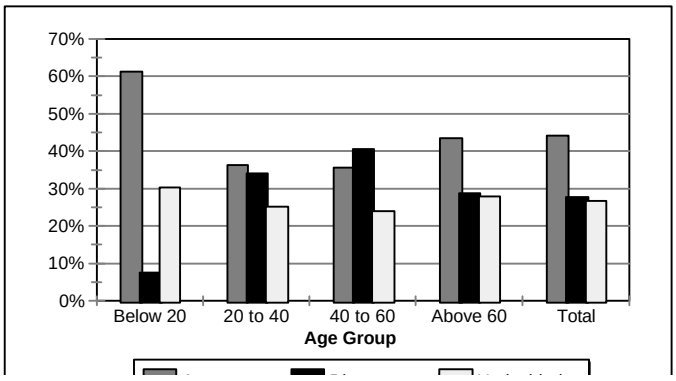


Question # 5: *Biotechnology is good for agricultural communities?*

The majority of those surveyed indicate their positive feelings with regard to the impact that biotechnology has on agricultural communities. A total of 44.15% agree with the issue, 27.73% disagree, and 26.76% are undecided on how agricultural communities could be affected by the spread of biotechnology.

However, it is worth mentioning that 40.56% of those in the 40 to 60 year age group disagree with this view. Also the difference in perceptions among those in agreement and disagreement in the 20 to 40 age group is also quite narrow (36.32% have indicated positively, 34.08% have indicated negatively, and 25.11% are undecided about the issue).

Figure 5: Survey results for question # 5.



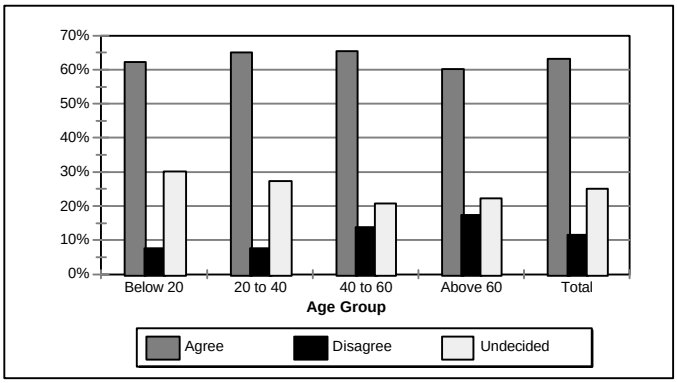
Question # 6: *Laws regulating biotechnology are urgently needed?*

It should be noted that the majority consensus not only of the total 1156 survey responses (63.25% agree, 11.61% disagree, and 25.14% are undecided), but also among individual age groups is that laws regulating biotechnology are urgently needed.

Even those below the age of 20 years indicate their agreement (62.26% agree, 7.55% disagree, and 30.19% are undecided), in keeping with the views indicated by the other groups in this case (65.02% of those in the 20 to 40 age group, 65.46% of those in the 40 to 60 age group, and 60.24% of those in the above 60 year group indicate positively).

This is in contrast to their other responses, which are often the exact opposite of the older, more experienced voices.

Figure 6: Survey results for question # 6.

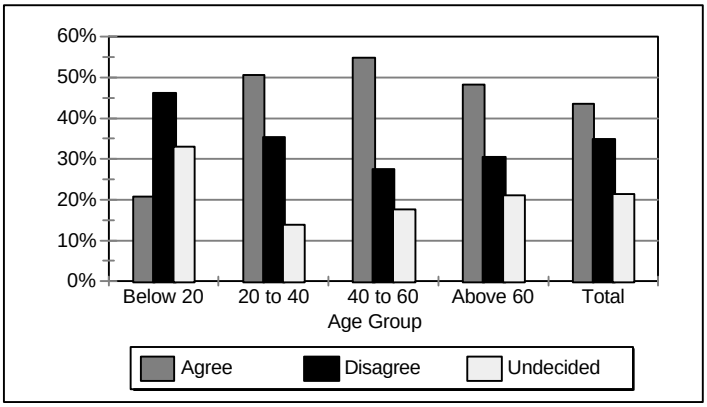


Question # 7: *Use of antibiotics in animal feed is a threat to human health?*

Figure 7 shows that the majority of people among all age groups hold the view that the use of antibiotics in animal feed is a threat to human health (50.67% of those in the 20 to 40 year group, 54.82% of those in the 40 to 60 group, and 48.32% of the survey responses from the above 60 year group have indicated positively to the question). Only among the below 20 year group does disagreement rule the majority opinion (20.75% agree, 46.23% disagree, and 33.02% are undecided with the issue).

Out of the 1156 completed survey responses that we received, 43.64% agree, 34.94% have disagreed, and 21.42% are undecided about whether or not the use of antibiotics in animal feed is a threat to human health.

Figure 7: Survey results for question # 7.



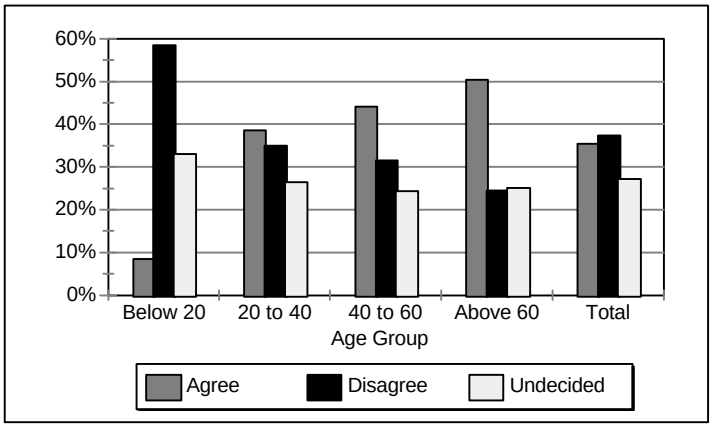
Question # 8: *We have more to gain than lose with biotechnology?*

Out of the 1156 completed survey responses that we received, 35.42% agree, 37.36% have disagreed, and 27.21% are undecided about whether we have more to gain than lose with biotechnology.

It should be noted that the only age group which disagrees with the statement that we have more to gain than lose with biotechnology is the below 20 year group. The other extreme opinion is indicated among the above 60 year group, which feels that with biotechnology we have more to gain than lose.

The responses to this question are interesting to note because similar studies conducted in this area so far have indicated to the contrary.

Figure 8: Survey results for question # 8.



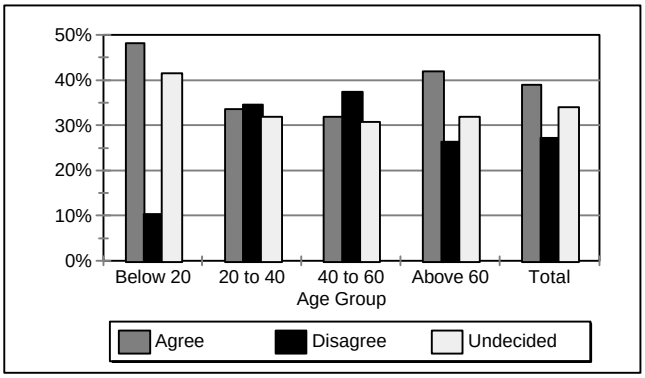
Question # 9: *Biotechnology increases farmer's profits?*

The results for question 9 indicate that the majority of people feel that while biotechnology as such has a lot to offer us, biotechnology when applied to agriculture may not be as beneficial. This seems to be the opinion especially among the 20 to 40 year

group (33.63% have indicated positively and 34.53% have indicate negatively) and the 40 to 60 year group (31.93% agree with the question and 37.35% disagree).

However, Figure 9 indicated that a large percentage of those surveyed are undecided about the role of biotechnology in increasing farmers' profits. (41.51% of those in the below 20 year group, 31.84% of those in the 20 to 40 age group, 30.72% in the 40 to 60 year group, and 31.80% from the above 60 age group, and a total of 33.97% have indicated their indecision about this issue).

Figure 9: Survey results from question # 9.

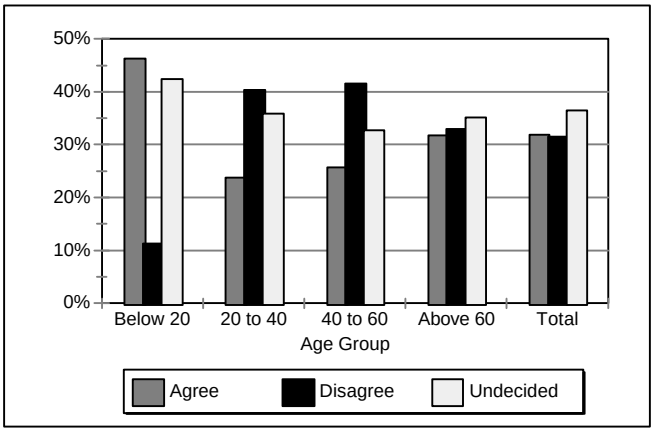


Question # 10: *Biotechnology is good for agricultural trade?*

There appears to be disagreement among the 20 to 40 years and the 40 to 60 year groups on the question of biotechnology being good for agricultural trade (40.36% of those in the 20 to 40 group, and 41.57% of those in the 40 to 60 age group expressed their negative opinion on this issue).

The total figures tilt towards an undecided opinion, mainly because of the perceptions expressed by a large percentage of those surveyed. (42.45% of those in the below 20 year group, 35.87% of those in the 20 to 40 age group, 32.73% in the 40 to 60 year group, and 35.17% from the above 60 age group, and a total of 36.56% have indicated their indecision about this issue).

Figure 10: Survey results from question # 10.



Views & Comments Received from the Surveyed

- *Too often we jump at new innovations. Only time will tell what widespread repercussions will results from genetic modifications.*
- *Biotechnology holds promise. But we are plunging ahead much too fast.*
- *The speed at which genetic technology is being implemented in agriculture is too fast to be comfortable with.*
- *Biotechnology is bad for human health.*
- *The odds are one in four that you will get sick this year from contaminated foods.*
- *Use of antibiotics in animal's feed is not a threat to human health only if used when needed.*
- *Use of antibiotics in animal's feed shouldn't be allowed.*
- *Human health is a part of the quality of food production, and genetically modified seeds have not increased the quality of agricultural production.*
- *Use of genetically modified seeds can, but have not increased the quality of agricultural production.*
- *Genetically modified seeds have increased the quantity of agricultural production but at what future considerations?*
- *Genetically modified seeds have increased the quantity of corn produced and have killed butterflies.*
- *Our methods of communication about the advantages and disadvantages of biotechnology need improving.*
- *Biotechnology increases the profits of only corporations.*
- *The farmers today get the same price of wheat as they did 50 years ago.*
- *Biotechnology is too costly to increase farmer's profits.*
- *Biotechnology increases the profits and is good for the seed companies, and not for farmers.*
- *A farmer can make more now, but what about the future?*
- *We need to be very specific when we talk of biotechnology today; otherwise it's just a lie in the guise of statistics.*
- *Biotechnology is good for agricultural trade only in the long run.*
- *GMO's have not been good for the US.*
- *Biotechnology issues are more complex and are related to social, historical, and religious concerns as well as the 'purely scientific.' Also biotechnology is not one size that fits all – some may be helpful and some dangerous.*

- *I agree that there should be labeling/ disclosure when genetically modified organisms are used. But I think the problem is the unequal power of the agribusiness companies vs. farmers – maybe not the technology itself.*
- *We have more to gain with biotechnology if it's used right.*
- *These survey questions are leading today and ought to be considered by policy makers*

Conclusions & Suggestions

The objective behind conducting this survey was to raise questions among the U.S. consumers, regarding advantages and disadvantages of biotechnology, and the absence of the labeling requirement for the genetically modified foods in the market. Upon completion of this project, it can be concluded that this objective has been met.

Many of the people who filled out the surveys made notes that they were interested in learning more about biotechnology, and how it could be a threat to human, animal, and environmental health. Requests were forwarded by many for reading materials on biotechnology and for the Kerr Center publication – *Mourning the Increasing Loss of Biodiversity*. Many possible solutions were provided by those surveyed about how to encourage changes in production methods and in our food system through changing purchasing habits. And most of them expressed the view that biotechnology may not be at all profitable or good for the globe in the long run.

It can also be concluded from the survey results that the majority of public in this country feel that we should keep our food supply in the hands of a large number of farmers and not surrender it to a handful of corporations.

Table 1: Total survey results.

Question #	Views	Total results (n=1156) (%)
1.	Agree	50.59
	Disagree	34.97
	Undecided	14.88
2.	Agree	66.84
	Disagree	15.38
	Undecided	17.78
3.	Agree	40.23
	Disagree	33.75
	Undecided	26.02
4.	Agree	38.41
	Disagree	27.56
	Undecided	29.08
5.	Agree	44.15
	Disagree	27.73
	Undecided	26.76
6.	Agree	63.25
	Disagree	11.61
	Undecided	25.14
7.	Agree	43.64
	Disagree	34.94
	Undecided	21.42
8.	Agree	35.42
	Disagree	37.36
	Undecided	27.21
9.	Agree	38.89
	Disagree	27.14
	Undecided	33.97
10.	Agree	31.88
	Disagree	31.57
	Undecided	36.56

Table 2: Survey results for various age groups.

Question #	Below 20 n=106/ 1156 (%)	20 to 40 n= 223/ 1156 (%)	40 to 60 n=498/ 1156 (%)	Above 60 n= 327/ 1156 (%)
1.Agree	66.98	40.36	44.58	50.46
Disagree	13.21	47.98	40.16	38.53
Undecided	19.81	13.45	15.26	11.01
2.Agree	79.25	64.13	57.03	66.97
Disagree	2.83	20.18	22.29	16.21
Undecided	17.92	15.70	20.68	16.82
3.Agree	57.55	34.53	32.13	36.70
Disagree	8.49	43.95	46.79	35.78
Undecided	23.58	21.52	21.08	27.52
4.Agree	61.32	30.49	33.73	41.28
Disagree	7.55	35.87	37.75	28.13
Undecided	30.19	33.63	28.51	30.58
5. Agree	62.26	36.32	35.54	43.43
Disagree	7.55	34.08	40.56	28.75
Undecided	30.19	25.11	23.90	27.83
6.Agree	62.26	65.02	65.46	60.24
Disagree	7.55	7.62	13.86	17.43
Undecided	30.19	27.35	20.68	22.32
7.Agree	20.75	50.67	54.82	48.32
Disagree	46.23	35.43	27.51	30.58
Undecided	33.02	13.90	17.67	21.10
8.Agree	8.49	38.57	44.18	50.46
Disagree	58.49	34.98	31.53	24.46
Undecided	33.02	26.46	24.30	25.08
9.Agree	48.11	33.63	31.93	41.90
Disagree	10.38	34.53	37.35	26.30
Undecided	41.51	31.84	30.72	31.80
10. Agree	46.23	23.77	25.70	31.80
Disagree	11.32	40.36	41.57	33.03
Undecided	42.45	35.87	32.73	35.17

The Kerr Center

The Kerr Center for Sustainable Agriculture, inc. is a nonprofit, 501(c)(3) organization supported by a private endowment, grants, and donations. The Kerr Center strives to find ways of sustaining the world's natural resources. It provides leadership, technical assistance, demonstrations, and education for farmers and ranchers seeking ecological and economical methods of producing food and fiber.

The Center's Sustainable Rural Development and Public Policy Program was established in 1996. The program assists rural citizens and decision- makers by sharing information about building strong and sustainable communities and the consequences of proposed policies for rural communities and agriculture. For more information on Public Policy and Sustainable Rural Development programs or publications, contact:

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