Student Response to Transgenic Meat: An analysis of a Fort Valley State University Survey

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Abstract

The study examines the factors the factors that influence Fort Valley State University students' willing to purchase transgenic meat. Results show that respondents who said they read labels when shopping were more likely to purchase transgenic meat. Results also suggest that respondents who trust scientists to tell them the truth about transgenic meat were more likely to purchase transgenic meat. Respondents who identified themselves as sophomores, however, were less likely to consume transgenic meat.

Keywords: transgenic meat, willingness to accept, biotechnology; genetically modified organisms

Introduction

Advances in biotechnology in agriculture have introduced a lot of controversies. One of such biotechnological advances is trangenesis. Transgenesis involves the technique of altering the characteristics of plants or animals by directly changing the genetic material (European Initiative for Biotechnology, 1998). The end product is usually referred to as transgenic or genetically engineered (GE) organisms (Becker and Cowan, 2009). Transgenic meat is therefore used here to refer to meat from an animal that has been genetically modified or from its offspring. The benefits of transgenic or GE organisms in agriculture, proponents argue, include breeding, quality (in terms of nutrition), disease control and profits (Kuznesof and Ritson 1996). Although transgenic animals have a long way to join the food supply chain, the recent U.S. Food and Drug Administration's (FDA) press release stating that it had no intention of mandating the labeling of transgenic meat when ready to enter food chain, has some consumers worried. The unanswered question is whether consumers will be willing to consume the meat from transgenic animals.

Earlier studies on the willingness to consume GM foods reports that the percent of consumers willing pay for (or consume) those products depended on factors such as risk perception, knowledge of science, morality and ethics (Lusk et al., 2001; Tegene et al., 2003). However, studies that covered transgenic animals dealt with those that were fed with transgenic feed (Onyango et al, 2004).

The segment of the population that is rarely surveyed is the future consumers, particularly students. To find out more about the attitudes of future consumers we want to determine the willingness of Fort Valley State University (FVSU) students to consume transgenic animal products. We assume that these students have the necessary education and can access information via newspaper, television and the Internet.

The main objective of this study is therefore to examine factors that influence students' willingness to purchase transgenic meat.

Survey Methodology

A survey instrument was used to collect information on Fort Valley State University students' perception of transgensis and their willingness to purchase transgenic animal products. The survey was conducted on the Fort Valley State University campus. Respondents were randomly approached and asked for their voluntary participation in the survey. The first part of the survey elicited information on knowledge about trangenesis, whether they read labels when shopping and perception of risk. Additionally, respondents were asked questions pertaining to their views about their trust in scientists, federal government and biotechnology industry experts when it comes to animal products. The second part dealt with demographic variables such as age, gender, and classification. The third part dealt with value attributes such as politics and religion.

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Questions related to trusts and willingness to purchase were borrowed from existing literature (Onyango et al, 2004; McCluskey et al 2003).

A total of 450 survey questionnaires were distributed among Fort Valley State University students. About 385 surveys were returned (about 86%) and 13 were deleted because they were either incomplete or fraudulent. For example, Fort Valley State University does not have a masters program in business but a few respondents said they were doing graduate studies. Finally, a total of 372 completed surveys were used.

Empirical Model

The logit model was used as the appropriate model to analyze students' willingness to consume transgenic meat and meat products. The logit model was used because it has been widely used in addressing binary variables in consumer behavior studies (e.g., Onyango et al, 2004).

The dependent variable (WTP) was used as a binary variable where the variable took the value of one if the respondent answered that he/she was willing to purchase transgenic meat at the same price as traditional meat and zero otherwise (see Table 1). Note that a yes answer meant that the respondent did not see any difference between transgenic meat and transgenic meat. The independent variables are classified into two groups: (1) demographic – age, gender and, knowledge of biotechnology; and (2) value attributes- politics, religion, and trust in government, industry and scientists to be truthful about transgenic animal products. Table 1 show the definitions and means of the variables used in the analysis.

The model is specified as follows:

$$\text{WTP} = \beta_0 + \beta_1 \text{Know} + \beta_2 \text{Rlabel} + \beta_3 \text{Trusc} + \beta_4 \text{Truind} + \beta_5 \text{Trugov} + \beta_6 \text{Risky} + \beta_7 \text{Age} + \beta_8 \text{Fresm} + \beta_9 \text{Soph} + \beta_{10} \text{Junior} + \beta_{11} \text{Female} + \beta_{12} \text{Cons} + \beta_{13} \text{Ind} + \beta_{14} \text{Relig} + \varepsilon$$

where the variables are as defined in Table 1 and ε is the error term.

Empirical Results

The study shows that over half (59.95%) of the respondents said they had at least some knowledge about transgenesis or biotechnology. When asked whether they were willing to purchase transgenic meat if the price was the same as traditional meat, the response was almost evenly split (Yes=50.27% and No=49.73%). Twenty eight percent of the respondents considered themselves to be conservatives. Majority (84%) of the respondents said consuming transgenic meat was risky.

Results show that reading of labels, trust in scientists telling the truth about transgenic meat and student classification as sophomore had statistically significant impact on student willingness to purchase meat from transgenic animals. Sophomores had a negative impact on willingness to purchase transgenic meat. Trust in scientists and reading labels had positive impact on willingness to purchase transgenic meat.

The marginal effects were calculated at the mean of the explanatory variables (last column in Table 2). Students who read labels when shopping were 13% more likely to purchase or consume transgenic meat than those who do not read labels. Also, students who trust scientists were 12% more likely to pay for transgenic meat than those who do not. However, sophomores were 17% less likely to purchase transgenic meat which is sold at the same price as traditional meat when compared with other student classifications.

Conclusion:

As food and fiber production continue be impacted by scientific advancement, the question continues to be whether consumers will accept those new or improved products. In this study we looked at students because they are the future consumers. The study shows that majority of the respondents had at least some knowledge about transgenesis or biotechnology and half said they were willing to purchase transgenic meat. Majority of the respondents considered themselves to be independents. The results indicate that factors such as reading of labels when shopping, trust in scientists and classification influenced the respondents' willingness to consume transgenic meat.

Given the experience of this study, some methodological improvements can be suggested for future studies. One major limitation of the study is that income was not included in survey. This was based on the assumption that students did not earn any income. To overcome the income limitation, future studies may employ experimental auction method.

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Table 1. Descriptive Statistics of Variables

Variable	Description	Mean	SD
WTP	1 if respondent was willing to purchase transgenic meat	0.50	0.50
Female	1 if respondent is female. 0 if male	0.50	0.50
Trugov	1 if respondent trusts the federal government on biotechnology issues, 0 otherwise	0.62	0.49
Truind	1 if respondent trusts the biotechnology industry on biotechnology issues, 0 otherwise	0.80	0.40
Trusc	1 if respondent trusts scientists on biotechnology issues , 0 otherwise	0.76	0.42
Know	1 if self reported as knowledgeable about biotechnology, 0 otherwise	0.60	0.49
Risky	1 if respondent associates genetically modified foods	0.84	0.36
Rlabel	1 if respondent reads labels when shopping	0.42	0.49
Relig	1 if respondent attends church at least once a month to several times a month	0.93	0.26
Cons	1 if respondent says he/she is conservative, 0 otherwise	0.28	0.45
Ind	1 if respondent says he/she is independent, 0 otherwise	0.41	0.49
Fresm	1 if respondent identifies himself/herself as freshman, 0 otherwise	0.27	0.44
Soph	1 if respondent identifies himself/herself as sophomore, 0 otherwise	0.32	0.47
Junior	1 if respondent identifies himself/herself as junior, 0 otherwise	0.23	0.42
Age	How old the respondent is	20.20	1.97

Table 2. Estimated Logit Coefficients and Marginal Effects of Explanatory Variables on WTP

Variable	Estimate	t-value	Change in Probability
Intercept	1.592	0.784	0.328
Know	0.289	1.248	0.060
Rlabel**	0.635	2.803	0.127
Trusc***	0.539	1.781	0.117
Truind	0.386	1.166	0.083
Trugov	-0.301	-1.220	-0.061
Risky	-0.118	-0.372	-0.023
Age	-0.109	-1.281	-0.022
Freshman	-0.472	-1.045	-0.101
Soph**	-0.797	-1.993	-0.172
Junior	0.150	0.396	0.030
Female	-0.107	-0.484	-0.022
Ind	-0.352	-1.326	-0.073
Cons	-0.243	-0.836	-0.051
relig	0.372	0.839	0.081
Log likelihood	238.9518		

*=0.01; **=0.05 and ***=0.10

Predicted			
Actual	0	1	Total
0	114	71	185
1	71	116	187
Total	185	187	372
Prediction Success Rate			61.82%