



The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search

<http://ageconsearch.umn.edu>

aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

No endorsement of AgEcon Search or its fundraising activities by the author(s) of the following work or their employer(s) is intended or implied.

Consumers Want Reduced Exposure to Pesticides on Food

Jean C. Buzby and Jerry R. Skees
(202) 219-0905

It is common to hear that the U.S. food supply is among the safest in the world. Yet, it is equally common to hear concerns expressed about it—particularly over microbial contamination, such as the much-publicized cases of *E. coli*-tainted hamburgers in the West, and pesticide residues, such as the scare over Alar pesticide on apples.

In a recent national survey by the University of Kentucky, primary household food shoppers revealed their opinions on food safety (fig. 1). Their top three concerns were fats and cholesterol (33.7 percent of respondents), bacterial food poisoning such as salmonellosis and botulism (30.0 percent), and pesticide residues on food (18.4 percent).

While previous consumer surveys have ranked pesticides as the top food-safety concern, the rankings in this survey reflect current scientific evidence which indicates that pesticides pose a lower risk to consumers than does microbial contamination.

Buzby is an agricultural economist with the University of Kentucky stationed at the Commodity Economics Division, Economic Research Service, USDA. Skees is an agricultural economist with the University of Kentucky.

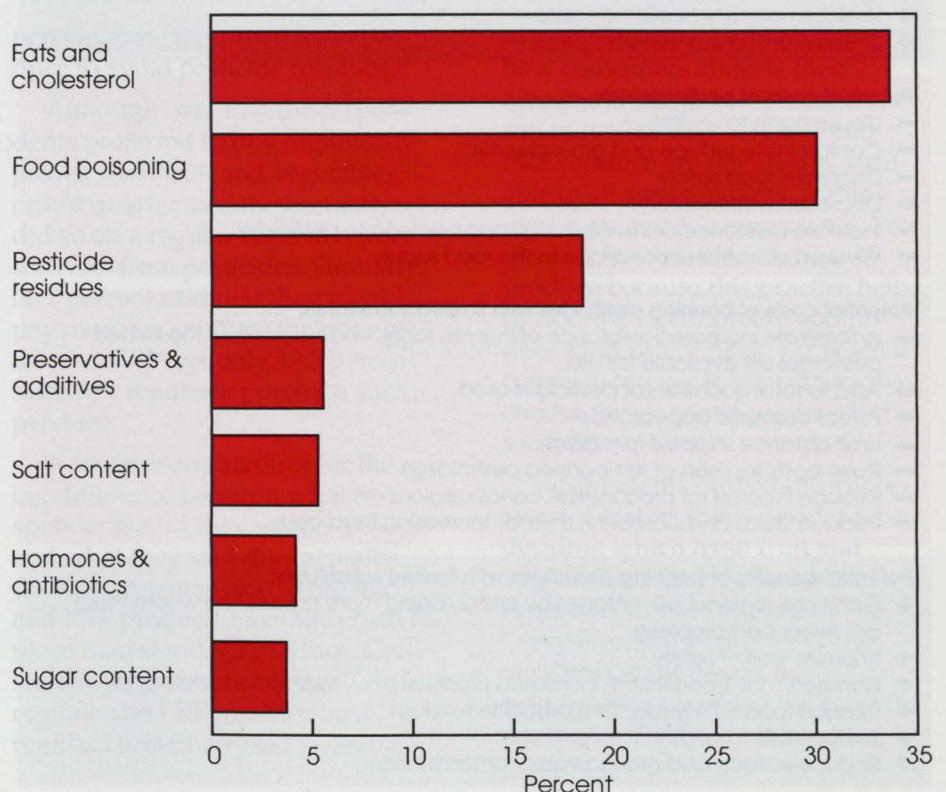
At Issue: Do the Costs Outweigh the Risks?

Pesticides used on crops are often considered effective, easy to use, and inexpensive. Nonchemical

technologies, such as pest-resistant crop varieties and cold storage, can only do so much to protect agricultural products against pests and to prolong storage life. Many producers and handlers in the agricultural

Figure 1

Consumers Surveyed List Their Top Food-Safety Concerns



marketing chain use a combination of pesticides and nonchemical technologies.

Pesticide use also has several costs, mainly considered in three categories: environmental, worker, and food safety (table 1). Pressing environmental concerns about pesticide use include impacts on wildlife, increased soil erosion, and contamination of surfacewater and groundwater.

Worker safety is also an issue because many users are exposed to high levels of pesticides. Individuals who use pesticides are generally at a much higher risk of being harmed by pesticides than are con-

sumers. Using gloves or respirators and following strict control practices can reduce worker exposure. Yet, these practices pose a burden to workers that Occupational Safety and Health Administration (OSHA) rulings have considered excessive in some factory settings.

Pesticides also pose food-safety risks to consumers. Consumers can take some preventive actions to reduce their exposure to pesticide residues, such as by washing, peeling, and cooking produce, or by purchasing products with lower risk (such as organic food products). Some consumers want more preventive action taken by the Gov-

ernment, such as bans, stricter regulations, and labeling.

Producers and other pesticide users (such as produce packing-houses) often rotate pesticides to help prevent build-up of pest resistance. If the Government bans effective pesticides, users may have to apply more of the less effective pesticides to do the same job. And if they have fewer pesticides to use, fungi, insects, and bacteria may more quickly develop resistance to the remaining pesticides. This means that banning some pesticides may make the remaining pesticides less effective which, in turn, may actually result in greater use of pesticides.

Table 1
Pesticide Use on Produce Carries Benefits and Costs

Potential benefits of pesticide use:

- + Decrease food costs
- + Enhance cosmetic appearance
- + Expand variety of foods marketed in any one location
- + Extend storage, transportation, and shelf-life
- + Help assure consistent year-round supply
- + Help meet the world's food supply needs
- + Improve food quality by preserving nutritional integrity
- + Reduce naturally occurring toxins
- + Stabilize and enhance crop yields

Potential costs of pesticide use:

- Cause harm to wildlife
- Contaminate surface and groundwater
- Decrease food safety
- Decrease worker safety
- Increase resistance of insects, fungi, and bacteria to pesticides
- Weaken consumer confidence in the food supply

Potential costs of banning pesticides with limited substitutes:

- Accelerate increased resistance of insects, fungi, and bacteria to the limited pesticides still available for use
- Add to total quantities of pesticides used
- Affect cosmetic appearance
- Limit distance shipped to market
- Raise costs for users of the banned pesticide(s)
- Reduce income for producers in certain regions
- Reduce yields and storability, thereby increasing food costs

Potential benefits of banning pesticides with limited substitutes:

- + Generate regional advantages by encouraging more production where there are fewer pest problems
- + Improve worker safety
- + Nonusers may benefit from increased produce prices without facing higher costs
- + Reduce food-safety risks from pesticide residues
- + Reduce risks to wildlife
- + Reduce surface and groundwater contamination

Survey Explores the Issues

In 1992, the University of Kentucky conducted a national survey of consumers' major food-safety concerns and the actions they take to reduce food-safety risks in fresh produce (see box for more details about the survey).

The survey also sought to find if food shoppers would pay more money to reduce their risks from pesticide residues, and if the amount they will pay would correspond to the level of risk reduction. This willingness-to-pay issue is represented by the amount respondents would spend for a grapefruit that has lower risks of pesticide exposure than a standard grapefruit.

The survey shows how demographics play a role in respondents' willingness to pay for food safety and ranks the factors they consider when deciding which fresh produce to buy.

Shoppers Relate Attitudes

Attitudes about pesticides varied widely, from 30 percent believing that the current levels of

pesticides were safe to 31 percent feeling that the Government should ban all pesticides. Sixty-two percent of the respondents said that in the past they had refused to buy certain fresh fruit and vegetables because of information presented by the media regarding harmful pesticide residues.

An overwhelming number (almost 90 percent) felt that all produce should be clearly labeled with information on pesticide use to allow them to make more informed purchasing decisions. Presently, most retail produce is not labeled with any pesticide information. Labels for nonorganic produce, printed on shipping cartons and containers, usually list pesticides used on the produce. However, such information is not included in supermarket displays, meaning shoppers do not have information about pesticides used.

A small proportion of produce is labeled as "organic" or "certified pesticide residue-free" (PRF).

Organic produce is grown using organic farming methods which do not use synthetic pesticides, growth regulators, or fertilizers. More than half the States have definitions for "organic" produce, but national standards required by the 1990 farm bill are still being developed.

PRF produce is grown conventionally, then tested and certified as free of pesticide residues.

Respondents to the survey believe in taking their own preventive actions to reduce their food-safety risks. Almost 90 percent said they regularly rinsed their fresh produce with water to avoid pesticide residues—and 18.6 percent washed fruit and vegetables with soap and water. Forty-seven percent said that they were wary of buying imported produce, but only 26.2 percent said that they regularly avoid buying it. Over 35

About the Survey

The effort consisted of a national phone survey, followed by a mail questionnaire. The phone survey provided the initial sample of primary food shoppers for the mail questionnaire and measured demographics—such as age, gender, race, household income, household size, and education—and attitudes about food safety. The study examined the relationship between household demographic characteristics and the amount of money that respondents would pay to reduce their risks from pesticides.

The phone survey completed interviews with 3,228 primary food shoppers who purchased fresh grapefruit for their households in the past year (a 65.3-percent response rate).

Although grapefruit is not necessarily riskier than other produce, grapefruit was selected as a representative crop for the food-safety scenario. Selection criteria included short storage intervals, low import levels, and distinct production areas.

Of those in the phone survey, 2,197 were willing to participate in the follow-up mail questionnaire. The mailing generated 1,671 completed surveys, giving a response of 76 percent.

The respondents were similar in profile to the U.S. population in terms of income, race, and education, but there were more women than men (and no children) in the sample. This proportion was expected, because women are more likely to be the primary food shoppers.

percent grew their own fresh produce to avoid pesticide residues.

Although over half the respondents preferred to buy organically grown fresh fruit and vegetables, only a quarter said they actually did so on a regular basis to reduce the risks from pesticides. Similarly, 50.7 percent said that they would pay more for produce that was certified as PRF, yet only 17.5 percent said they regularly purchase such produce.

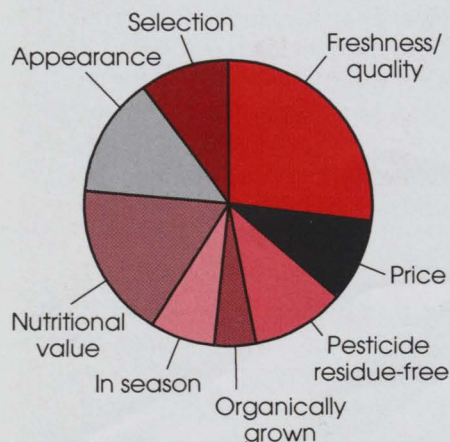
A few reasons account for the big difference between what respondents said they would like and what they said they actually do. One reason is price—organic and PRF produce generally cost more than standard produce. Consumers may not be able to afford organic and PRF produce on a regular basis (increased awareness

of pesticide risks could change how consumers allocate their household budgets). A second reason is availability—organic and PRF produce are not always available in all supermarkets. A third reason is cosmetic appearance. People may like the idea of organic produce because this practice helps protect the environment and reduce food-safety risks. Yet when it comes to buying it, consumers may choose the standard produce if it is more attractive.

Respondents ranked the importance of factors they consider when deciding which fresh fruit and vegetables to buy. Responses ranged from "not important" to "very important" (fig. 2). Of the very important issues, freshness/quality was cited the most frequently, with 27.2 percent of the

Figure 2

Freshness/Quality Cited Most Frequently as "Very Important" in Purchasing Decisions



Concerns cited as "very important" in deciding which fresh fruit and vegetables to buy

"very important" rankings (fig. 2). Other factors considered very important in selecting produce were nutritional value, product appearance, and certified PRF.

Almost 90 percent of the respondents who considered PRF as a very important factor also said the same of freshness/quality. Therefore, it is difficult to determine which of these two factors is more important to respondents.

Respondents Would Pay More To Lower Their Risk

The shoppers surveyed said they would be willing to pay more than the typical purchase price of grapefruit to reduce their risk from pesticide residues (see box). For example, respondents would pay, depending on the measurement method used, an average of between 15 and 69 cents above the 50-

cent purchase price for a grapefruit to buy one with a lower risk from pesticide residues. Five percent said they would pay more than double the price of a fresh grapefruit to buy a safer one.

Respondents were presented with hypothetical 50-percent or 99-percent reductions in risk from eating fresh grapefruit. On average, those faced with the larger reduction in pesticide exposure from fresh grapefruit were willing to pay a few cents more than were those given the 50-percent scenario. This suggests that consumers in this sample were sensitive to the level of risk reduction.

In this survey, demographics play a role in consumers' willingness to pay. Younger respondents were willing to pay more for the risk reduction than were older respondents. Less educated people were willing to pay more than those with more schooling. Income, race, and household size had no apparent effect on whether respondents would pay more. Female respondents would pay more than male respondents would. Also, those voicing stronger opinions about pesticide residues were willing to pay more than were those with more neutral opinions.

Implications for Policy

If consumers want stricter pesticide regulations imposed, they will most likely have to share the increased costs to growers and other pesticide users, either directly through higher food prices or indirectly through higher taxes. Most consumers in this survey said they are willing to shoulder some of the extra cost in order to reduce their risk from pesticide residues in food.

Almost 90 percent of those responding to the survey thought that all produce should be clearly labeled to tell what pesticides were

used. This implies strong support for national organic standards and labeling as well as support for listing the pesticides used on conventionally grown produce.

More information is needed on consumers' willingness to pay for different levels of risk reductions from pesticide residues and whether the amount consumers would pay would cover Government and industry costs of providing reduced pesticide residues. This information would help regulators decide whether to impose, and how to pay for, stricter pesticide laws or a larger role in certification and labeling of fresh produce.

References

- Buzby, Jean C. "A Cost-Benefit Analysis Using Contingent Valuation Data of Banning a Post-harvest Pesticide from Use in Fresh Grapefruit Packinghouses," Unpublished dissertation, University of Kentucky, Department of Agricultural Economics, Dec. 1993.
- Buzby, Jean C., Jerry R. Skees, and Richard C. Ready. "Using Contingent Valuation to Measure Consumers' Willingness to Pay for Food Safety: Results from a Survey on Pesticide Risks," Paper presented at NE-165 Workshop Valuing Food Safety and Nutrition, Alexandria, VA, June 2-4, 1993.
- Eom, Young Sook. "Consumers Respond to Information About Pesticide Residues," *FoodReview*, Vol. 15, Issue 3, USDA, Economic Research Service, Oct.-Dec. 1992.
- Zellner, James A., and Robert L. Degner. "Consumer Willingness to Pay for Food Safety," Paper presented at 1989 Annual Meeting of the Southern Agricultural Economics Association, Nashville, TN. ■