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FEARING FEAR: COMMUNICATION ABOUT AGRICULTURAL BIOTECHNOLOGY

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This article, based on a presentation at the National Agricultural Council's meeting (Chess, 1998), nudges the agbiotech field to look at its communication practices by examining (1) the assumption that education will increase acceptance of genetically engineered food, and (2) the fear that labeling will reduce acceptance.

Information Is Not A Cure

An assistant commissioner for a state agency was explaining to a crowd at a public meeting that the hazardous waste incinerator proposed for the community posed a minimal risk. According to him, the incinerator would, at most, lead to the risk of one additional cancer case in a population of one million over a 70 year history. The crowd's response: "We hope you are the one" (Hance, Chess, & Sandman 1988).

Would a better explanation of "one in a million" have led opponents to say "Ah, yes now we understand. By all means, bring your incinerator to our neighborhood"? Most practitioners realize that the answer is "no;" better explanations of risk don't necessarily equate with more acceptance of a risk. Yet, inordinately great attention has been paid to crafting messages about technological risks.

The push for "educating" the public arises from the assumption that once people are educated, they will see risk as the experts do. Yet, research provides little "support for the assumption that public concerns are due to insufficient or inaccurate information--or that public attitudes will become more favorable as people become 'educated' or 'better informed.'" (Freudenburg & Rursch, 1990).

Many factors may influence attitudes and behaviors including, among others, the social context surrounding the risk and psychological variables. For example, several studies have shown that perception of agricultural biotechnology differs according to the form of the application (applications to plants are more acceptable than those involving animals) (Frewer, Shepherd, & Sparks, 1994). The acceptability of these applications varied due to perceptions about ethics,

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benefit, and needs (Frewer, Shepherd, & Sparks, 1994).

Figure 1: False model of power of information

Research concerning other technologies also suggests that citizens who have more information are often not on the same side as the technical experts. Human beings are more complicated than a linear model that suggests an injection of information will transform how people respond to an issue. If human beings were as simple as the model in Figure 1, they would be more likely to make decisions that conform to actuarial tables, which point out how various activities and occupations affect our longevity. However, those who have tried to "educate" their children know that providing information is no guarantee of changing either attitudes or behavior.

Similarly, information is often not sufficient to make people become "rational," as defined by technical experts. A prominent social scientist has pointed out that the concept of rational is subjective: where you sit in society, determines where you stand on what you consider rational (Rayner, 1992). According to one study of toxicologists, even experts in the same field (who presumably know similar information) may make different judgement calls due to gender and race (white males are more accepting of risk than non-white ones and women) or professional affiliations (toxicologists in industry perceive key issues differently than those employed in other sectors) (Kraus, Malmfors, & Slovic 1992).

One review of studies on the relationship between knowledge and beliefs found that informed people are not necessarily supporters of technology (Johnson, 1993). For example, the nuclear industry, long bound by public opinion, has funded a variety of studies to determine if people well informed about radiation support nuclear issues. Questions asked were rather technical in nature, for example: What is the process that generates energy in nuclear power plants? What is the fuel that is used in nuclear fission plants? The researchers then looked at the relationship between ability to answer these questions and support for nuclear power.

About one-half of the studies indicate that the people who knew the answers to such questions supported nuclear power. Other studies found either no difference in knowledge between pro-and anti-nuclear supporters, or they found people who knew more were more anti- nuclear. Studies on other issues, including irradiated food and hazardous wastes, also found similar patterns of the relationship between knowledge and support for technology.

Of course, perceptions of other technological issues may differ greatly from those of food produced through agricultural technology. However, results of studies exploring the relationship between support of agricultural biotechnology and knowledge also seem inconsistent. For example, Frewer and colleagues (1994, p. 33) found in a study of food-related hazards that "perceived risk did not decrease as perceived knowledge of the potential hazard increased" . Yet, a review found links between knowledge and acceptance (Zechandorf, 1994).

Both an Office of Technology Assessment (1987) and a New Jersey survey (Hallman & Metcalfe, 1993) found significantly more support among those who said they had heard a lot about genetic engineering than those who heard little. Conversely, an analysis of attitudes of citizens of different European countries towards biotechnology found that countries with the highest level of education and information, Denmark, Germany, and the Netherlands, had the least support for biotechnology (Almas & Nygard, 1995). In short, the link between knowledge and attitude is unclear, at best.

This research does not imply that the biotechnology industry should skimp on providing information or developing educational materials. Instead, it suggests that information cannot be seen as an attitudinal cure.

Hunches Are Not Enough

Despite the unwarranted belief in the power of information, industry and government may not pay sufficient attention to the development of educational materials. Providing information is relatively easy. Developing useful information is not. For example, when two brochures about radon risk were tested to determine readers' understanding, the brochure structured to facilitate decision making was notably more helpful than one which contained similar information, structured differently (Morgan *et al*., 1993).

While research on perceptions of biotechnology are increasingly common, research about what people want to know or have difficulty understanding seems sparse. If educational materials about agricultural biotechnology are similar to those dealing with chemical manufacturing, much has been written but little to nothing has been pre-tested. Pre-testing is essential to determine what readers' understand, let alone if they find materials relevant, credible, and acceptable (Office of Cancer Communications, 1989).

Reconsider Labeling

For the most part, the agricultural biotechnology industry has vehemently opposed labeling of its products, arguing that labeling should deal with products themselves, not the processes to produce them (e.g., Barefoot, Beachy, & Lilburn, 1994). The logistics and cost of separating genetically engineered foods for the purpose of labeling have also been at issue.

The United States Food and Drug Administration has agreed with industry that labeling of genetically altered foods should not be mandated. Nonetheless, those interested in promoting genetically altered foods might want to consider voluntary labeling as a way to address concerns about biotechnology. A significant amount of research about other technologies suggests people see technological hazards as riskier if the hazards are unfamiliar (e.g., Slovic, 1987). This research explains, for example, why people are usually more fearful of chemical plants than automobiles despite the mortality statistics that indicate chemical plants cause far fewer deaths per year than automobiles. This evidence also suggests that familiarity with a new technology may not breed contempt, but rather greater comfort.

Similarly, research suggests that foods that are uncommon, eaten by few and without announced benefits, are seen by laypeople as more likely to cause harm (Fife-Shaw & Rowe, 1996). In addition, a multivariate analysis I conducted on results of a survey of New Jersey residents (Hallman & Metcalfe, 1993) suggested that one of the key variables that distinguished those who

supported agricultural biotechnology products was their conviction that they had already eaten biotechnology products. (Interestingly, because no products were on the market at the time of the survey, respondent conviction was false, although reassuring.) These findings reinforce that perception of familiarity may reduce fear. In addition, even supporters of agricultural biotechnology feel strongly about the desirability of labeling (e.g., Hallman & Metcalfe, 1993).

Although United States industry has successfully resisted mandatory labeling of products developed through biotechnology, voluntary labeling should be the subject of further research. Otherwise, the agbiotech industry will continue fearing public fear.

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