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Occupational and Environmental Health Risks in Farm Labor

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Abstract

This essay provides an introduction and overview for this special thematic section. We discuss the general occupational and environmental health risks that those who provide farm labor - farmers, farm families, and farmworkers - experience as a result of commercial agriculture. We first briefly review some of the farm safety research literature, highlighting the important trend of listening to those who perform farm labor as they speak for themselves about their health and safety concerns. We then introduce the individual articles in the collection and highlight their common themes: (1) control; (2) economic stress; (3) beliefs; and (4) access to information. We conclude that applied anthropology has a key role to play in reducing occupational and environmental health risks for farm labor by conducting the research that indicates the most proximate causes of farm injury and illness, and by developing appropriate interventions to address these causes.

Keywords

farm health; agricultural injury and illness; farmers; farmworkers

Commercial agriculture produces abundant and low cost food. This supply of food enhances the health and lives of millions of people. At the same time, commercial agriculture has exacted a price from society and the environment, as well as from those individuals who provide agricultural labor – farmers, farm families, and hired farmworkers. In the United States, commercial agriculture has resulted in increasingly larger farms, while the number of farms and farmers have decreased. The results of this process, documented since the 1940s (Goldschmidt 1947), have been individual dislocation and community disintegration. In lesser developed countries, the greater international marketing of agricultural produce has meant uneven economic and community development, an agricultural system that lacks sustainability, and greater agricultural production but less local food security. Environmentally, the costs of commercial agriculture include deforestation, river siltification, and water pollution. In both developed and less developed nations, commercial

agriculture depends on mechanization and the use of non-renewable natural resources, as well as chemical fertilizers and pesticides that often contaminate water supplies and the food being produced.

For the individuals who supply the labor for commercial agriculture, the costs of employment include greater exposure to environmental and occupational health risks. Agriculture is one of the most hazardous industries in the United States; Myers and Hard (1995) report that mortality was 22.9 per 100,000 agricultural workers over the period 1980 through 1989, making agriculture among the top three most dangerous industries in the U.S. The acute and chronic conditions that result from farm work include injuries (lacerations, fractures, and amputations) from machinery, falls, and livestock; hearing loss; a wide range of respiratory disorders; arthritis; cancer; and mental illness (Donham and Horvath 1988). In the 1990s, the growing concern for the health of those who perform farm work is reflected in the publication of several books on farm health (e.g., Donham and Rautianinen 1997; Langley, McLymore, Meggs, and Roberson 1997), the publication of a new journal devoted to agriculture and health (*Journal of AgroMedicine*), and the funding by the National Institute of Occupational Safety and Health of several regional agricultural health and safety centers.

Much of the interest in farm health and safety has been directed at the farmer owner-operator and farm family. The environmental justice or environmental inequity movement has extended this concern for the health of farm owner-operators to concern for the health of migrant and seasonal farmworkers (Moses, Johnson, Anger, Burse, Horstman, Jackson, Lewis, Maddy, McConnell, Meggs, and Zahm 1993; Sexton and Anderson 1993). Farmworkers are a disenfranchised and medically underserved population, composed largely of minority group members. Low wages, lack of health insurance, long work hours, and lack of transportation all contribute to limiting many farmworkers' access to health care. As of 1995, 70% of all farmworkers were foreign born, and 94% of these foreign born farmworkers (65% of all farmworkers) were from Mexico, with workers from several Central American nations making up most of the remainder (Mines, Gabbard, and Steirman 1997). Most of those farmworkers who are not Hispanic are African American. In the United States, migrant and seasonal farmworkers are at substantially greater risk than the general population for exposure to occupational injuries, communicable diseases (e.g., tuberculosis and HIV/AIDS), and dental disease (Ciesielski, Hall, and Sweeney 1991; Ciesielski, Handzel, and Sobsey 1991; Ciesielski, Seed, Esposito, and Hunter 1991; Ciesielski, Esposito, Protiva, and Piehl 1994; Rust 1990; Skala 1987; Slesinger 1992). There is also great concern about the short and long term effects of farmworker occupational exposure to agricultural chemicals (Abrams, Hogan, and Maibach 1991; Arcury and Quandt 1998; Zahm and Blair 1993; Zahm, Ward, and Blair 1997).

The articles in this special thematic section address some of the important occupational and environmental health risk issues for those who perform farm labor. Each of these articles reports research designed to understand farmers' and farmworkers' perspective and perceptions of the occupational and environmental health risks they face. In this introduction we first review some of the farm safety research literature, especially the important trend of encouraging those who perform farm labor to speak for themselves about their health and

safety concerns. We then introduce the individual articles and highlight their common themes. These themes include issue of control and power, stress, health beliefs, and access to information. Together, the authors argue that programs intended to decrease the occupational and environmental risks faced by farm labor must move from a model focused on education alone, to a model that shifts control and power to those who perform agricultural labor.

Agricultural Health Research

Epidemiology is one of the major research approaches to documenting the occupational and environmental health risks of farm labor. Much of the pre-1992 epidemiological research in this area has been compiled by Nordstrom, Brand, and Layde (1992). Recent epidemiological analysis of agricultural injury and illness data is based on documentary sources such as death certificates, hospital records, or other surveillance data (e.g., Brackbill, Cameron, and Behrens 1994; Myers and Hard 1995; Zwerling, Burmeister, and Jensen 1995), or on fixed response surveys (e.g., Zhou and Roseman 1994; Browning, Truszczynska, Reed, and McKnight 1998). An important project currently under way is the Agricultural Health Study (Alavanja, Sandier, McMaster, Zahm, McDonnell, Lynch, Pennybacker, Rothman, Dosemeci, Bond, and Blair 1996), which focuses on the relationship of pesticides and cancer among licensed pesticide applicators and their families in Iowa and North Carolina.

These epidemiological studies are extremely valuable for documenting the extent of different agricultural injuries and illnesses, and for identifying the demographic characteristics of those experiencing these agricultural injuries and illnesses. However, because these methods do not give a voice to those who do farm labor, our knowledge of the causes and, therefore, ways of preventing farm work injury and illness are limited. Demographic variables such as age, gender, "race," and education are not the proximate "causes" of injuries or illness. Rather, they are indicators of underlying causes. Assuming that increasing education or knowledge about farm injury or illness will lead to reductions in rates of injury is also faulty. To get to these underlying causes, it is important to understand the farming system in which the work is done, the beliefs of those doing the work, and the social and economic environment in which they are working.

There is a growing body of agricultural health research based on learning the perspectives and beliefs of those doing this work. For example, Arcury (1995, 1997) conducted in-depth individual and focus group interviews concerning farm safety with African American farmers. He found that they knew how to work safely. However, due to economic pressures (e.g., lack of time, old equipment) they were not always attentive or able to follow safety rules. Kidd *et al.* (1997) used focus group interviews to learn how farm parents taught their children to work safely. They concluded that parents allowed children to perform "high-risk chores" when other labor was not available or when they were pushed economically.

Several investigators have examined migrant and seasonal farmworker actions to reduce exposure to pesticides. Three clear themes emerge from these analyses. First, it is important to provide farmworkers with information about their possible exposure to chemicals in the work place. Second, this information alone is not enough; farmworkers must perceive that

they have sufficient control of the work environment to use this safety information. Finally, farmworkers will interpret occupational illness within the framework of their pre-existing health system. Vaughn (1993) found that farmworkers who used self-protective behaviors to reduce their exposure to pesticides were those who received safety information, believed that these safety methods would work, and felt they had control over the work place. On the other hand, Lantz *et al.* (1994) found that farmworkers believed that pesticides could cause health problems, particularly cancer, but would not ask for safe work procedures to be used for fear of losing their jobs. Baer and Penzell (1993) found that almost a quarter of the pesticide-exposed farmworkers with whom they spoke believed their symptoms resulted from *susto*, brought on by the fright of exposure.

The Special Thematic Section

These articles build on the trend toward field-based agricultural health research. The investigators in each study have spoken directly to farmers and farmworkers about occupational health. While these articles focus on varied populations and consider domestic and international issues, they are crosscut by important themes for understanding the health of farm labor. Acknowledging these themes is crucial if we wish to develop interventions that will reduce the injuries and illness resulting from doing farm work.

The articles are focused on farmers (Perry and Bloom; Thu; and Andreatta), and farmworkers (Quandt, Arcury, Austin and Saavedra; and Harthorn). The research considers dairy farmers, and mixed grain, fruit, and livestock farmers (Perry and Bloom; and Thu, respectively) in the American Midwest, as well as fruit and vegetable producers in the Caribbean (Andreatta). Two of the articles examine health issues among contemporary migrant and seasonal farmworkers in North Carolina (Quandt *et al.*) and California (Harthorn). Three of the articles (Perry and Bloom, Andreatta, Quandt *et al.*) concentrate on the effects of agricultural chemicals, and a fourth (Harthorn) includes pesticides as a major concern. One of the articles (Thu) considers the general health of farm labor. With the diverse communities and topics examined in these projects, they are united in identifying the importance of four major themes that influence occupational health of farm labor: (1) control; (2) economic stress; (3) beliefs; and (4) access to information.

The four themes are interwoven. *Control* in these articles is not limited to having the ability to make decisions to follow safe work procedures at the work site. It extends to control over where one lives (for farmworkers), and of the general market for one's produce (farmers) and labor (farmworkers). *Economic stress* includes fear of not having work (farmworkers), and knowing that - due to no control over the weather, international commodity markets or financial markets-one's livelihood and way of life may be lost (farmers). Under this stress, safe work practice is ignored to get the job done. The *belief* that a health risk is real, or believing that one is vulnerable to a known health risk, increases the likelihood of illness or injury. Not believing becomes a mechanism for disregarding risks in the face of economic stress or lack of control. Finally, having *access to information*, or the lack of this access due to a lack of control, is important to being cautious about health risks on the farm.

Each of the articles emphasizes different connections among these themes. For example, Thu's (1988:338) analysis illustrates the relationship of control and stress:

...farmers identify a pattern of social and economic conditions related to industrial agriculture that converge to create stressful conditions resulting in increased risk for injuries and health problems. These conditions include: increased off-farm work; economic uncertainty; market prices; farm finances; financial burdens of young farmers; weather uncertainties; less labor on the farm; larger machinery and increased use of inputs with fewer workers; more intense and prolonged contact with heavy machinery; longer working hours and days; pressures from neighbors, bankers, and landlords; and the fact that the farm is the office that you don't go home from after work.

Perry and Bloom (1988:347) show how belief systems that allow for taking health risks are related to economic stress:

Surprisingly it was not among knowledge and information that myths and misconceptions around pesticide hazards emerged - clearly farmers were knowledgeable and well informed. Instead, it was the cultural logic that sacrificing immediate health and well-being was acceptable for achieving short-term gains in productivity and farm sustainability that increased their vulnerability to health hazards.

Andreatta's (1988:357) analysis shows that exposure to agrochemical hazards among small producers in the Caribbean results from international market control, lack of producer knowledge, and economic stress:

...participants from multiple levels are involved in producer and farmworker agrochemical exposure. Consumer demands for unblemished inexpensive food, transnational corporations distributing chemicals known to be harmful to humans and the environment, local island governments permitting the importation of those chemicals for use, and growers who use the chemicals (regularly and without knowledge of their danger) to cultivate or raise marketable, edible agricultural commodities together comprise a complex multilevel matrix of actors who maintain agrochemical use in the agro-food system.

Quandt *et al.* show that the beliefs of those in control – farmers – can affect the exposure of the workers they control to the hazards of farm chemicals, no matter what the knowledge and beliefs of these workers. A lack of control and economic dependence means that workers are left with little choice but to be compliant with employer demands.

Harthorn, although directing her analysis toward the health of farmworkers, ties each of these themes together in her discussion of the appropriate level for health intervention among farm labor. If the causes of exposure to occupational and environmental health risk in farm labor are access to information or health beliefs alone, then an individual or community intervention is appropriate. However, if lack of control and economic markets are driving the health risks, then only interventions that result in basic changes at the industry or government regulation level will truly be effective.

Conclusion

Each of these articles shows the importance of a field-based approach to understanding the causes of occupational injury and illness in farm labor. This approach allows us to move beyond the limited approach that assumes that simply educating farm labor will reduce injury and illness. The more important factors underlying occupational and environmental disease in farm labor – control, economic stress, beliefs, and information – are complex and difficult to address.

Applied social and behavioral science has a key role to play in reducing occupational and environmental health risks for farm labor. The research we conduct can evaluate the effectiveness of educational programs. More importantly, our research and theory directs us to understanding the entire farming system, the importance of beliefs as well as “knowledge,” and the place of local farms in the world market (Arcury and Quandt 1998). By integrating these different layers of understanding, we can develop appropriate interventions to reduce occupational and environmental health risks to farm labor.

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