Despite the democratization of South Africa in 1994, which brought the agricultural sector within the ambit of legal protection, farm workers remain vulnerable to an undue burden of social and health problems. Alcohol abuse due to the DOP system, pesticide poisonings, and other occupational hazards illustrate that the likely success of efforts at redress depends on a greater awareness of the rights and justice dimensions of the health problems facing these workers. International trade policies may exacerbate inequalities that deprive them of opportunities to realize their rights at national level. A public health agenda must integrate into programs and policies to address the health of farm workers the recognition that violations of their rights underlie much of their burden of ill health. **Key words:** farm workers; human rights; environmental justice; pesticides; occupational exposures; alcohol.

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FARM WORK IN SOUTH AFRICA: LIVING AND WORKING CONDITIONS

Despite the democratization of the State, and the adoption of a Bill of Rights in South Africa’s constitution,
conditions on many South African farms remain poor. About one third of people employed in South African agriculture in 1996 had no schooling, and studies have suggested median levels of schooling on farms in the Western Cape province of less than six years. Illiteracy, while declining among younger age groups, remains at about 20% among adult farm workers in the Western Cape and exceeded 50% in a sample of 117 remains at about 20% among adult farm workers in the Western Cape and exceeded 50% in a sample of 117 elderly men and women in Stellenbosch in 1998.

Average annual income for farm workers in South Africa in 1996 was less than ZAR 700 (less than US$75) representing about a third of the average national wage. A household health survey in 1995 found that more than two thirds of farm-worker families in the Western Cape lived in waged poverty, collectively generating household monthly incomes of less than ZAR 900 (about US$100). Housing conditions vary widely, being poorest on smaller commercial farms. A 1996 survey of farms in two northern provinces in South Africa found that only 34% of farm workers had running water in their homes, 27% had no access to toilet facilities of any kind, and less than 50% had access to electricity.

Moreover, labor conditions on South African farms are among the poorest of all employment sectors. Until recently, farm work was effectively unregulated and dominated by a culture of paternalism, not always free of violent coercion. Assaults of workers by farmers continue, as does interpersonal violence between farm workers at levels that place a huge burden on South Africa’s already overstretched rural health care system. A survey of sugar cane workers in 1994 found that 14% of respondents reported being assaulted by farm management in the preceding 12 months. More than 60% of trauma cases presenting at hospitals in the rural farming areas of the Western Cape are thought to be alcohol-related.

Despite extension of legislation to the agricultural setting covering rights to collective bargaining, basic conditions of employment, social security benefits, and workplace health and safety, the implementation of such measures remains bedeviled by myriad factors. These include an understaffed and under-resourced inspectorate, fragmentation between government departments responsible for surveillance and enforcement, a culture of non-regulation entrenched over decades among employers, the legacy of state-sanctioned racial discrimination, and the weakness of trade union and NGO organization in rural areas. Rights that exist on paper for farm workers (see boxed text) have yet to result in practical changes in the lives of farm workers in the absence of effective worker organization or strong civil society institutions.

HEALTH STATUS AND OCCUPATIONAL HEALTH HAZARDS FOR FARM WORKERS

Farm workers experience tremendously high burdens of both communicable and noncommunicable disease. For example, TB incidence rates in rural Western Cape farming areas exceed 1,000 per 100,000 of the population, rates which even for South Africa are two to three times higher than urban rates. Similarly, childhood stunting rates among farming communities of over 30% are twice as high as national averages for urban children.

Exposures to occupational health hazards, such as pesticides, organic dusts, and ergonomic and mechanical hazards, have been well documented. As is the case for agriculture generally, rates of injury reported among South African farm workers are higher than those in most other occupational sectors, this despite the lack of comprehensive coverage by workers’ compensation. As a result of significant use of child labor in agriculture, work-related injuries to children as young as 11 years old and pesticide poisonings from occupational exposures of children continue to cause untold suffering for farm families and pose a challenge to the realization of children’s rights contained in the South African constitution.

Unlike traditional occupational categories, farm work is typically associated with shared risks for family members. For example, an occupational fatality review found that drowning in unprotected farm dams was the single biggest cause of unnatural death among farm worker children in the rural districts of the Western Cape between 1990 and 1992. Moreover, many pesticide poisonings occur in farm workers’ homes as a result of domestic use of farm pesticides.

Indeed, pesticide exposure is a significant hazard for South African farm workers, particularly in the fruit industry, with South Africa representing the largest market in sub-Saharan Africa. Expenditure on pesticides increased fourfold from ZAR 325 million (US$43 million) in 1985 to over R ZAR 1,400 million (US$192 million) by 1998. Given government policy to promote the entry of black entrepreneurs into commercial farming, where pesticides and other inputs are routine, a large number of people with little experience or technical support are being increasingly drawn into forms of agricultural production, which may include significant hazardous exposures. Although cases of acute poisoning notified to the health authorities nationally rarely exceed 200, there is considerable underreporting of such cases. Despite the lack of data, it is evident that it is particularly those without access to power who bear the brunt of acute and chronic morbidity due to pesticide exposures.
A CASE STUDY: DOP TILL YOU DROP (OF PESTICIDE POISONING)

One of the unique features of South African agriculture is the historical practice introduced by colonial settlers of paying their workers with alcohol rations. Initially introduced as a method of inducing indigenous people to work for the Dutch settlers, it gradually became established as a powerful form of labor control as well as a means of disposing of surplus product from the wine farms of the Western Cape.48

This morning beautiful, clear weather. We have begun to make preparations for the establishment of a school for the Company’s Angolan slaves … To animate their lessons and to make them really hear the Christian prayers each slave should be given a small glass of brandy and two inches of tobacco. . . . Within a few days, these slaves will be brought under a proper sense of discipline and become decent people.” —Excerpts from the diary of the first commandant at the Cape Colony under rule, Jan van Riebeeck, cited in Shell, 1994:79.49

The practice, known locally as the DOP system, has served to enmesh farm workers over generations in a cycle of poverty in which alcohol dependence, inter-personal violence, and poor self-esteem are intimately connected.50,51 With few other social outlets or facilities available, farm workers came to internalize the role of alcohol in daily life and in their valuations of social well-being. As described by Scully: “Labourers came to see the daily ritual of the tot as an immutable feature of their experience on the farm. Pieter Cupido, a labourer from Genadendal, said that on one farm he had a good master: ‘I could drink as much as I liked.’” Although no longer practiced to the extent previously, the legacy of the DOP system continues to live on among Western Cape farm workers in the form of widespread alcohol dependence and abuse, resulting in myriad poor health indicators.15

There are many ways in which high levels of alcohol consumption may predispose workers to occupational injury. For example, alcohol may increase the risks of acute and chronic effects of pesticide poisoning through mechanisms both social and physical:

- The inebriating effects of alcohol may lead to disinhibition, carelessness, and accident-prone behavior.
- Long-term alcohol abuse may result in poor learning skills, unhealthy lifestyles, and general increased susceptibility to hazards at work.
- High consumption from an early age may impair learning skills needed for training in pesticide safety.
- Alcohol intoxication may mask the clinical effects of pesticide poisoning.
- Physiologic impacts on the liver and on metabolic processes may potentially increase the toxicity of pesticides and their breakdown products.
- Alcohol as a neurotoxicant may interact with or potentiate the known neurotoxic effects of many pesticides.

Empirical data providing support for this argument come from evidence from a study in 1993 that sprayer men on fruit farms who reported ever living on farms where alcohol was provided as part of the DOP system...
were twice as likely (OR = 2.8; 95% CI 1.10–7.82) to report a past pesticide poisoning than were those who had had no previous exposure to DOP.12

However, in addition to the above, the DOP system also serves to place farm workers at risk of exposures to pesticides through particularly unusual and iniquitous routes, illustrated in the following case study. In September 1994, 24 farm workers from a wine estate near Worcester in the Western Cape were notified as poisoned by pesticides when they were given wine contaminated with the highly toxic pesticide aldicarb.52 The wine had been decanted from a 50l barrel, which had been used to store the wine used for distribution to the workers.

Press reports focused entirely on the pesticide and ignored the fact that the poisoning could have taken place only because the workers were being given wine at the end of the working week. When interviewed by the press, the farmer described it somewhat ingenuously as “the custom of the workers to relax with a drink after a day’s work on the farm,”53 conveniently ignoring the role of institutionalized abuse and inequity in employer–employee power relations.

Despite the illegality of providing alcohol to workers, the case showed that as recently as the last decade of the 20th century, the DOP system was ongoing. The local health services were reluctant to respond to this evidence of DOP practices, fearing that any attention to the DOP would antagonise the farmers and undermine the access that nursing personnel had to farms to deliver mobile clinic services. Public perceptions and those of key stakeholders were that drinking was a common behavior among farm workers, and mishaps were to be expected. Racial stereotypes (of Colored people as heavy drinkers) helped to compound these perceptions.52

Two observations on this case relate to gender. Of the 24 poisoned workers, they were evenly divided between 12 women and 12 men.52,54 Thus the risks experienced by women in this extraordinary exposure were equally shared across genders, contrary to popular belief that women are at lower risk for occupational disease. Second, the DOP system impacts differentially on women, who as carers in the household often have to manage the consequences of alcohol abuse by their male spouses or children, such as domestic violence directed against women.55 Moreover, as a direct impact, children of Western Cape farm workers have among the highest rates of fetal alcohol syndrome (FAS) in the world with a prevalence of around 5% due to excessive maternal ingestion of alcohol in pregnancy.56

UNDERSTANDING THE CAUSE OF PESTICIDE POISONING—BLAME THE VICTIM?

This case prompts a reflection on how to understand the nature of a pesticide poisoning case. On the one hand, workers can be blamed for their excessive drinking, much like poisoned workers can be blamed for carelessness in handling chemicals or for failing to wear protective clothing. Authorities in South Africa responsible for epidemiologic monitoring have historically made use of categories for reporting on causes of poisoning such as “ignorance,” “carelessness” and “negligence.” These terms provide pseudoscientific credibility to what are in effect extremely subjective value judgments. Thus, for example, a 1999 Department of Health review of poisonings due to pesticides could comment as follows:

Local studies, based on these records, show that ignorance is the main cause of pesticide poisoning in South Africa. This is followed by suicide, accidents and lastly negligence. It is clear that very few people are aware of the toxicity of pesticides. . . . the urgent need for very specific training and education is reflected in the “ignorance factor” taking on such a dominant role.—Department of National Health and Population Development, 199257 [Author’s emphasis]

Such sweeping value judgments are not just the prerogative of public officials, but are also inserted into the discourse of health professionals. Thus, an assessment from a major poison center framed the critical causal pathway for pesticide poisoning as follows (translated from Afrikaans):

These agents [pesticides] are freely available in shops and convenience stores, and there exist no special measures to inform the buyer of the dangers of the pesticide they will use. This can give rise to careless and negligent use of these agents. . . . An education program is urgently needed.—Van der Merwe et al., 198858 [Author’s emphasis]

This conclusion of this understanding implies that the source of the problem rests with the end-user, and leads inevitably to a solution located in individualized strategies aimed at behavior change, devoid of any context in which poisoning occurs. Yet, if one considers the case of the DOP-poisoned workers, far from being an event in which workers’ “custom” was the precipitating factor, it is evident that years of systematic violation of farm workers’ rights have entrenched a phenomenon in which alcohol has become an institutionalized yet inherently self-destructive coping mechanism for a super-exploited and captive workforce.52,59 The case is perhaps the clearest argument that pesticide poisoning takes place in a wider social context, and that a broader construction of causation is warranted, one that can take account of factors over which victims of pesticide poisoning have no, or limited, control. Indeed, human rights analyses afford the opportunity to examine the full context of vulnerability in which such incidents occur, making explicit the power relations underlying the circumstances leading to the poisoning. Notions of ignorance, carelessness and negligence would be more appropriately applied to the employers, public officers and health professionals who failed to act to prevent
the poisonings, than to the workers concerned, whose rights have been, and continue to be violated by a social system geared to preserving employers’ control of labor at the expense of workers’ rights to dignity, health and security.

PESTICIDE POISONING—A WIDER WEB OR A SPIDER’S WEB†?

These insights are borne out by research findings involving qualitative interviews with farm workers, farmers, and health officials in 1998.60 Although the primary aim of the study was to evaluate the role of public health officials in the public health control of pesticide poisoning, the study findings showed some very important differences in the way pesticide poisoning was conceived by different parties. Public health officials produced a relatively linear and uncontextualised narratives of why poisonings occurred. The precipitating events focused on accidents and suicides, and typically made use of terms such as “carelessness,” “negligence,” and “ignorance” in explaining events (all quotes in this section are translated from Afrikaans).

. . . the house was sprayed for fleas and flies and the people were not thoroughly informed about the use of the house after it was sprayed, so it is ignorance.

. . . he knew that he must . . . wear an overall, he was wearing boots, he has all these things, but he did not wear the gloves. Because it was too hot.

Absent from public health officials' narratives were any questioning of alternatives to pesticide usage, any examination of why it was not possible for different kinds of protection to be used, or what structural barriers existed to safety. The only contextual factors that public health officials were able to incorporate into their narratives were factors such as illiteracy and poor design of protective clothing.60

By contrast, farm workers, when asked about their understanding of why pesticide poisonings had occurred, provided a wide set of answers that placed the poisonings in the context of poor work and living conditions on their farms, often referring to poor general health conditions on farms. For example, workers were able to identify direct exposures to themselves as well as indirect exposures to family members with a sophisticated recognition by management or authorities:

. . . we spray in the wind and this must not be because that vapor . . . makes you so terribly nauseous, immediately you have heart burn.

. . . take my wife for instance . . . she does not come close to the insecticides, but every year when the spraying season starts, then her skin breaks out again—a rash, as if she is allergic to the insecticides . . .

Workers were able to identify exactly what the problem was with protective clothing:

We have gloves but it’s these old plastic things. It’s just so—two, three days, then the finger tips [are] broken. Then the poison comes through it [the torn glove].

. . . you may as well spray without those things [protective clothing] then you do get wet from the poisons as you do from the sweat underneath that clothing.

. . . the tractors are not working, the spray pumps leak, the men have not even started spraying yet and they are already wet, and all that stuff must be fixed . . .

Yet the opportunities for workers to assert their knowledge are met with apathy or even hostility:

. . . the work must just carry on, it does not matter . . . if you want to say, but look, this thing is not right, I am not going to work with this thing [you must just carry on].

Your contract states . . . That you may not refuse . . . any work. You must be willing to do any work.

A lot of things are not right, which I do not like, but a person cannot really talk—if you talk then all hell breaks loose.

. . . we feel that we also want to provide insight into the spray or in the farming . . . The problem that we sit with is that if we come with an alternative, a better suggestion, it is not accepted.

I am faced with a mountain, and the mountain is the management . . . [safety representative]

To understand the context underlying these comments, it is important to recognize the sociology of employer–employee relationships on farms in South Africa. While some have characterized the relationship as one of brutality,19 or violent hostility,18,20 it is really the notion of paternalism that is the underlying core that characterizes labor relations on farms.50 Farmers believe themselves to be responsible for their workers as a father would be for his children. Sometimes, this is associated with the use of force to maintain discipline. For example, one farmer describes his “burden” as follows:

. . . you have the coloured workers living on the farms.

. . . So you are the first person to whom he complains. You are the policemen, you are a magistrate, if he gets hurt you must nurse him yourself, or you drive him to the clinic. And sometimes you must play the role of a father punishing his children. If there are mischievous boys who transgress then you must punish them yourself. You don’t run to the courts for every little complaint.61

†Pesticide usage encompasses a complex of intertwined actors, interests, and agencies, which may be conceptualized as a spider’s web, at the center of which is located the event of pesticide poisoning.72 This heuristic may be useful to understand the layers of causation surrounding pesticide poisoning.
Not all farmers exert this paternalism in violence. Indeed, many farmers have moved away from old-fashioned paternalism to newer forms of modern management in their relations with workers. In fact, there is some irony in the evidence that it is not only white farmers who abuse the rights of black employees, but also newly entrant black commercial farmers who cut corners on meeting their obligations to honor the labour rights of black farm workers. Nonetheless, the metaphor of paternalism remains core to understanding labor relations in South African agriculture. Not surprisingly, workers are the first to grasp the social context in which they can or cannot prevent their exposures. Dependence on the employer for housing is crucial in limiting the workers’ ability to take independent action:

If I do not do the work, then I must get off the farm... My children will suffer because of it—my wife...

Even this issue of access to housing is gender-specific. Male workers enjoy preferential treatment, with women farm workers having no security of tenure outside the employment status of their male spouses or other family members. Women’s presence on the farm is contingent on their male partners’ employment and, as part of an implicit and sometimes explicit contract, women usually must deliver temporary labor on demand for the employer’s needs at peak season. This expectation for labor will take precedence over any other kind of employment that the women have secured off the farm, even if the other employment offers better terms than anything obtainable in agriculture. For example, a 1999 article from a Western Cape newspaper described how women farm workers are forced to give up their factory or domestic jobs when picking season commences.

The farmer only needs me from January to April... but we struggle financially the rest of the time, so I decided to get a job in town. The farmer said it was OK but then when the season started he wanted me back. I had to give up my other work. If I refuse, he’ll probably ban us from the farm. And maybe even my parents. They’ve been working there for 27 years.—Farm worker Julie Davids, quoted in “Farm women in work trap,” Cape Times, February 22, 1999)

Indeed, because control over the living conditions of their employees is one of the main mechanisms by which employers exercise their control over their labor force on farms in South Africa, recent legislation has sought to establish security of tenure for long-term farm employees, and prohibit unfair or arbitrary eviction. However, the Act has met with limited success, especially because of the particular vulnerability of women.

Why is it that farm workers’ conceptual models of the context in which poisoning occurs appear to be more advanced than those of the public officials? On the one hand, workers’ experience is often ignored as unscientific in professional discourse. On the other hand, it is often the training of professionals that promotes linear and uncritical thinking, coupled with the bureaucratic practice learned from older role models in the field, which leads health officials to stop short of making the contextual links in pesticide poisoning. In the South African setting, the preoccupation of health officials with the completion of an investigation report as being the end-stage of this pathway reflects the bureaucratic culture in the service—once you file the report, the problem is finished, and you can add it to your monthly tally of activities. Rather than fixating on the paper report, officials should, of course, be more concerned about what difference they make in practice to the lives of workers who have little access to resources to change the conditions in which they live and work.

One of the further consequences of this flawed understanding of causation is in the way it manifests as an understatement of the problem of occupational pesticide poisoning. While the underreporting of pesticide poisoning in South Africa has been well documented, it is less apparent that underreporting selectively affects pesticide poisonings arising from occupational exposures, and poisonings affecting women. The preconceptions of health officials responsible for surveillance relating to notions of ignorance, carelessness, and negligence may play a considerable role in this gender and causal bias in surveillance. Indeed, considerable evidence exists pointing to the fact that, far from experiencing less risk of exposure to occupational hazards, as is typically claimed in many areas of occupational epidemiology, women farm workers experience significant exposures to pesticides unrecognized by traditional surveillance systems.

Failures of surveillance systems to identify highly vulnerable groups are not confined to hazardous chemical surveillance. For example, among 165 occupational fatalities identified in the rural Western Cape between 1990 and 1992, less than 10% were reported, yet over 40% of rural deaths involved children 18 years old or younger, indicating the particular vulnerability of children and young workers on farms.

**FARM WORKERS’ HEALTH, RIGHTS, AND HUMAN POTENTIAL**

One of the mantras of occupational epidemiology has been the concept of the healthy-worker effect, in terms of which employment is thought to result in a selected working population systematically more healthy than the general population. In developing countries, however, particularly in agriculture, many factors may operate to encourage the opposite effect. High rates of unemployment may keep sick workers in their dangerous jobs. Massive informal-sector expansion and onerous trade conditions operate to keep wages down such that many working people fall into the poverty category...
because of very poorly paid jobs.69 Nowhere is this better illustrated than in the agricultural sector in South Africa, where the general health status of farm workers is extremely poor, even when compared with an already-compromised national average.

Farm work in South Africa is remarkable for the closed nature of the sector.32 Waldman51 has shown in her ethnographic analyses that farm workers tend to move from one farm to the next but stay within the same social stratum. Relatively few children of farm workers manage to leave the sector, precisely because of the inadequate educational infrastructure in rural farming areas, and poor social circumstances, manifested in levels of childhood stunting of the order of 30%. Chronic undernutrition as a child, perhaps coupled with intrauterine insults with alcohol and tobacco products, will curtail the lifetime potential achievable by young people entering adulthood on farms. As a result, escape from the cycle is extremely difficult. A study in 1993 among fruit farm workers found that less than 15% had parents who were not themselves farm workers.12 Given the low skills content of farm work as practiced in South African agriculture, farm work in many senses represents the opposite of a healthy-worker cohort—a repository for a low-skill, high-morbidity, eminently controllable working population.70 Far from being able to fulfill the notion of rights advanced by Amrtya Sen71 intrinsically linked to freedoms and agency, farm workers are faced with seemingly insurmountable structural obstacles to securing health, with little opportunity to realize their human potential.

Evidence that chronically undernourished farm children grow up to become chronically undernourished adult farm workers has been previously published.70,72 Moreover, given a lifetime of other neurotoxic insults, including alcohol excess, head trauma and pesticide exposure,72 it should be well recognized that farm workers’ opportunity to exercise the agency to change the conditions of their vulnerability is threatened at all turns. If human rights are to be translated into meaningful empowerment of the most vulnerable, it is at this level that human rights has to intervene to remove the factors that reinforce the dependence and passivity of farm workers.

One of the consequences of this very high level of background morbidity at a community level is the inappropriateness of the regulatory framework for pesticide registration. Toxicologic risk assessment data in South Africa used for pesticide registration do not take into account factors that may increase the toxicity of pesticides otherwise considered safe in countries of the North. Indeed, companies applying for registration of pesticides in South Africa submit toxicologic data from parent multinationals based on experiments conducted under conditions vastly different from African environments, and modeled on healthy European male volunteers.73 No attempt is made to provide data on the potential impacts of these chemicals on rural African women.54,68 Similar neglect of gender applies to the setting of South African occupational health standards24.

INTERNATIONAL TRADE AND SELF-REGULATION: THE POWER OF THE MARKET—FACT OR FICTION?

In the absence of any substantial indigenous pesticide production capacity, most of South Africa’s pesticide industry is concentrated on formulation and distribution. Foreign multinationals dominate the industry, with Dow Chemicals having bought out the largest single local company, Sanachem, in early 1999.‡ On the one hand, the entry of multinational corporations (MNCs) offers the opportunity to ratchet upwards health and safety standards in the local subsidiary company, if adherence is enforced to best-practice standards.45 However, the current legislative framework for pesticides in South Africa is poorly geared to ensuring the safety of end-users—namely farmers, farm workers, and their families. Chemical companies, therefore, can continue to do good business in South Africa without having to worry about the impacts on end-users. Not surprisingly, a large number of pesticides banned or severely restricted in developed countries, such as paraquat, aldicarb, pentachlorophenol, and methyl parathion, continue to be registered for agricultural use in South Africa. Moreover, interviews with government informants indicate that the registration process in this country would not be able to apply the precautionary principle in deciding whether to register a new pesticide because of the anticipated outcry from the chemical industry.74

Furthermore, global trade measures such as removal of tariff barriers and subsidies have been unevenly played out in international forums, with the result that South African agriculture has been competing with European and American producers on a wholly uneven footing.43 European farmers, for example, enjoy trade protection under the terms of an EU agricultural agreement, while South African producers must cut costs without the benefit of state interventions in order to achieve a possible foothold in Northern markets. The incentive to cut costs on safety measures, therefore, appears attractive. Despite the assumptions made by economists that increased agricultural exports would inevitably lead to improved welfare for farming employees, there is little evidence that the benefits actually reach those most in need. Indeed, a case study of the fruit industry in the Western Cape showed that increasing agricultural exports were associated with increasing levels of deprivation in the rural communities where the fruit was grown.75

‡ More recently, Montsanto bought out a South African agribusiness, Sensako, continuing its plans for dominance of biotechnology, seed sale, and crop protection activities in South Africa and 27 other African countries (source: Business Day South Africa, December 14, 2000).
One consequence of globalization has been the decline in employment in South African agriculture noted earlier, along with increased mechanization and externalization of work. Furthermore, to gain access to the fickle European consumer, whose preferences are for unblemished fruit, South African producers are under pressure to minimize pest damage, providing a strong incentive to join those already on the pesticide treadmill. Pesticides are high-cost inputs, and to be able to spend on pesticides, farmers will economize elsewhere, particularly on labor costs, either by cutting staff or by developing more efficient labor extraction systems.

However, the flip side of the international market is pressure from consumers in the North for residue-free produce. South African exporters have therefore had to maintain a delicate balance in producing “high-quality” exports while minimizing pesticide residues. As a result, the deciduous fruit industry has been at the forefront of integrated pest management (IPM) development in South Africa. However, given an IPM focus driven by market (consumer) preferences, this has led to a focus on environmental impacts without necessarily placing worker health at the forefront of its agenda.

For example, a recent attempt by the industry, using a self-audit tool for integrated crop management, aims to convince overseas markets of industry’s commitment to responsible use of pesticides by applying an IPM scoring system for its producers. However, only 16% of the weighting of the tool is allocated directly or indirectly to occupational health and safety issues, while items such as environmental management, agricultural practices, responsible crop protection, and integrated quality management of the product take up close to 60% of the weighting.

On the other hand, trade initiatives that seek to link working conditions with access to sales in countries of the North, appear to be having better impacts. The Ethical Trade Initiative is a U.K.-based program that develops codes of conduct in exporting countries that raise labor standards and tie access to export markets to respect for basic labor rights on producer farms. One such pilot program being developed in the Western Cape seeks to develop gender-sensitive labor standards on a sample of participating wine farms in exchange for access to lucrative U.K.-based supermarkets. Thus, while market forces operating at an international level may appear to hold benefits for workers in developing countries, they are a double-edged option. It is in the detail of the mechanisms that marginalized workers, particularly women, stand to benefit or not.

**SOLUTIONS: HUMAN RIGHTS, PUBLIC HEALTH, OR BOTH?**

How do we begin to understand how solutions to the problems facing farm workers’ in South Africa can be constructed? First, because it is particularly those with-out access to power who bear the brunt of acute and chronic morbidity due to hazardous occupational exposures, social justice and empowerment must be part of a public health solution. Central to the data presented in this review is the thread of disempowerment of farm workers and their families. These challenges should ideally lead public health professionals to place greater weight on the recognition of the human rights dimensions of many of the health problems of farm workers that require multisectoral interventions that span the divide between public health and human rights.

Rather than professionals acting on behalf of the vulnerable, it is the organization of farm workers by farm workers, or rural people by rural people, that will create strong and vibrant organizations of civil society—trade unions, women’s groups, community groups, environmental lobbies. By asserting their needs, farm workers will be active agents in demanding rights to human dignity as well as securing better health. It is also within these organizations that women’s struggles will be played out, both in relation to the powerful forces in government, industry, and employers and within organizations of rural people and farm workers to ensure that gender is adequately addressed.

This examination of the situation of farm workers in South Africa has illustrated the consistency of the model developed by Mann and colleagues characterizing the relationship between health and human rights. In terms of this triadic model, human rights violations impact farm workers’ health (relationship 1); farm workers’ lack of access to health and other social services deprives them of the opportunity to realize their rights (relationship 2); and, last, interventions to promote workers’ rights and to provide adequate public health care operate synergistically in advancing farm workers’ well-being (relationship 3).

Moreover, in the context of institutional efforts to build a culture of human rights in post-apartheid South Africa, a number of human rights innovations offer unique opportunities to integrate human rights in the work of occupational and environmental health professionals. Not only does the South African Constitution include a Bill of Rights hailed as one of the most progressive in the world, but it also establishes a range of institutions to support the building of a human rights culture in civil society, including a Human Rights Commission and a Commission for Gender Equality. Application of human rights approaches on farms in relation to rights to information, to training, and to participate in regulatory decisions and in surveillance may go some way to addressing both the powerlessness that underlies hazardous exposures as well as the gendered nature of such exposures.

For example, 10% of workers surveyed on fruit farms in the Western Cape in 1993 reported acting as human markers for aerial spray of pesticides, an exposure incompatible with respect for human dignity or
bodily integrity, and, therefore, generally outlawed in many countries. Not surprisingly, the South African Human Rights Commission initiated a National Inquiry into Human Rights in Farming Communities in May 2001 in response to such examples of the violations of the rights of farm workers in the country. The Commission will release its report in 2003, offering a blueprint not only to lawyers and human rights activists, but to health professionals responsible for addressing the unacceptable burden of disease in rural farming communities in South Africa.

Those who deal with the control of pesticide poisoning and other occupational and environmental hazards need to adopt models of causation that recognize the critical role of power relations underlying these health problems. This understanding should manifest in greater emphasis on empowerment of, and agency by, farm workers in our public health programs, policies, and research dealing with occupational hazards in agriculture. At a policy level, it is also critical that development choices (e.g., pesticide-based agriculture versus integrated pest management) be based on an explicit exposition of the full costs of a particular technology (e.g., pesticide use) so as to avoid the externalization of costs that presently occurs, and that serves to undervalue burdens accrued to the most marginal sectors of society. Moreover, in a global context, trade and development policies should not reinforce inequalities, but rather ensure that the realization of human rights can further health objectives.

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