

**Top on the agenda:
Health and safety
in agriculture**

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Editorial

For time immemorial, workers on the land have tilled the soil in pain. They have been among the last to organize and, even when organized, their interests in promoting their own welfare in terms of safety and health have suffered through a general lack of attention to the needs of this group of workers. If the agenda of the June 2000 Session of the International Labour Conference carries an item on safety and health in agriculture (first discussion), no doubt ILO constituents have selected this item in order to bring to the fore, once and for all, the gravity of the safety and health problems of rural workers in the hope of arriving at a common strategy internationally.

The following articles all portray a grim picture of poorly remunerated labour, usually unorganized, supported by six-digit figures of accidents and deaths around the world. All the articles are variants of the same sad story: inclement conditions; poor accommodation; working and living on the same sites; no protective clothing or equipment or, even when available, not well adapted to climatic conditions; farm machines imported from industrialized countries which are not ergonomically suited to the functionality requirements; bites and stings from animals and insects; and, not least, the ill effects of pesticides on workers' health and the environment. The demands of agricultural work also take their toll on children: they drop out of school to assist their parents in the fields, many falling victims to the risks and hazards of fieldwork.

In the countries of Eastern and Central Europe, for example, Kundiev makes a strong case for immediate intervention and assistance in the area of occupational safety and health in rural areas. Less spectacular, no doubt, than war victims, the workers who fall prey to the risks and hazards involved in their work none the less undergo forms of suffering and neglect which are just as obscure, just as unspeakable. The statistics call for rapid action in this sphere, starting with appropriate policies which could be implemented without undue delay.

The first discussion of safety and health in agriculture next June in Geneva will hopefully tie some loose threads together, but it suffices to demonstrate against no scarcity of available evidence, as do the following articles, that concerted international action could go far towards reducing the incidence of accidents and mortality among rural workers. For workers' organizations, this edition is principally a means to assist them in the ongoing discussion in the instances of the International Labour Conference as well as in their own organizations' work: the names of the different international institutions are provided by a number of authors as well as their areas of specialization. International cooperation agencies are also referred to so that workers' organizations could consider developing projects and requesting guidance and assistance for addressing safety and health problems among workers.

Training, too, for rural workers' representatives and general awareness raising have been stressed. The experiences of trained worker representatives within countries of the European Union are well worth emulation: Walters perceives the problem of accident prevention in agriculture as one which is more related to the actual management of hazards than the technical nature of either the hazards themselves or their control, as well as the difficulties involved in communicating to the owners and managers of small enterprises the benefits of good health and safety management. Of no less key relevance in terms of training requirements is Amuko's account of NUPAW's application of the methodology of the study circle. Loewenson, in an in-depth analysis of health and safety problems of women workers in agriculture in selected African countries, not only highlights their dual burden but forcefully calls for an integration of health and safety education into services and markets as a sensitization thrust. As a broader canvas, Forastieri and Hurst respectively provide an overview of the ILO's SafeWork Programme and the IUF's policies and activities with regard to health and safety in agriculture.

The two main challenges identified, however, are, firstly, to develop a comprehensive workers' education and training policy, and, secondly, for the social partners with the support of other interest groups to engage in a full onslaught to combat the abuse of pesticides and to shape national and international policies so as to ensure the common pursuit of sustainable agriculture and development.

Since its inception in 1919, the ILO has adopted 12 Conventions (all with their accompanying Recommendations) of direct relevance to safety and health in agriculture. In addition, 17 other instruments are also relevant to the protection of workers in agriculture, covering such areas as right of association, workmen's compensation, holidays with pay, protection of migrant workers, indigenous and tribal peoples, to mention only a few (see Annexes I and II). To cite the report *Safety and health in agriculture*¹ which will be presented to the International Labour Conference in June 2000, there is worldwide recognition that agriculture is a particularly hazardous sector – alongside mining and construction – in both developing and industrialized countries. Although agricultural wage workers are covered by the Plantations Convention, 1958 (No. 110), and agriculture is also generally covered by the ILO's framework Occupational Safety and Health Convention, 1981 (No. 155), which applies to all branches of economic activity, there is no comprehensive Convention dealing with the safety and health problems of workers in agriculture. The report concludes that there is a need for a more holistic approach to occupational safety and health standards: a Convention containing basic principles of safety and health in agriculture, supplemented by a Recommendation, would provide a sound basis upon which subsequent national legislation could be built, and could be usefully complemented in the future by the preparation of a code of practice.

Within this general thrust, the ILO Bureau for Workers' Activities attaches special importance to this edition devoted to the theme of safety and health in agriculture. Alongside the Conference debates in June and in preparation for the second discussion of the item next year, it is our wish that the following articles nurture and enrich the proceedings of these instances, on the basis of which new instruments will be shaped, vital not only to the future of workers in this sector but to social progress universally.

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Note

¹ ILO: *Safety and health in agriculture*, Report VI (1), International Labour Conference, 88th Session, Geneva, 1999.

The ILO Programme on Safety and Health in Agriculture: The challenge for the new century – providing occupational safety and health services to workers in agriculture¹

Valentina Forastieri

SafeWork Programme

ILO

An estimated 1.3 billion workers are active in agricultural production worldwide. This figure represents half of the world labour force. Although the proportion of agricultural workers is under 10 per cent in the more developed regions, almost 60 per cent of the agricultural workforce is concentrated in developing countries where a big proportion of them are to be found in waged labour.

Measuring the challenge

In developing countries, too, a large number of people below the poverty line live in a rural environment (World Bank, 1997). According to data from the Food and Agriculture Organization and the United Nations, the number of people living in poverty in Latin America and the Caribbean rose by 60 million between 1980 and 1990 (FAO, 1997; ECLAC, 1993). Even if the majority of poor people live in cities, the incidence and severity of poverty are greater in rural areas.

Temporary workers: more exposed and less paid

Agricultural workers are underprotected as compared to workers in other sectors. The most vulnerable groups are found in subsistence agriculture: as waged workers in plantations; landless daily paid labourers; temporary and migrant workers; and as child labourers. Temporary work in agriculture is characterized by casual forms of labour, precarious working conditions and little or no social protection. It is largely prevalent in Asia and Central America. Around 45 per cent of rural workers in Central America are temporary workers and 56 per cent of those are landless wage workers. Temporary workers are more exposed to occupational hazards than other agricultural workers and are

lower paid. Migrant workers may also have language and cultural difficulties at work and in their daily lives. Mobile and seasonal workers may suffer from multiple physical and chemical exposures that accumulate from different workplaces.

No injury benefit or insurance scheme

Agricultural workers suffer markedly higher rates of accidents and fatal injuries than other workers, with very few resources available for compensation. In many countries, agricultural workers are excluded from any employment injury benefit or insurance scheme. Self-employed farmers are rarely covered by any recording and notification system, nor do they enjoy access to social security benefits except on a voluntary basis on the grounds of their own contributions.

Women to till land and raise families

Recent economic and technological changes are having an impact on the employment and working conditions of agricultural workers and therefore on the quality of their work and life. In the less developed countries, the situation is often worse because most men emigrate to urban centres seeking a job and women are left behind to till the land, produce and harvest the crops, while at the same time raise a family. Their workload is heavy and their incomes are low as they depend on the sale of primary products, the prices of which are usually outside their control. Therefore, the proportion of women and children in agricultural employment is also increasing to complement the family's income. Women now account for 20 to 30 per cent of total agricultural waged employment. In Asia, over 80 per cent of the workforce in agriculture is represented by women.

Children working in fields at the age of five

According to the new ILO estimates, there are at least 250 million children between 5 and 14 years of age working in developing countries, where child labour predominates. For almost one-half of them (120 million), this work is carried out on a full-time basis. According to a survey recently carried out by the ILO in 26 countries, participation rates of children in economic activities are much higher in rural areas than in urban centres. The rate of children between the ages 5 to 14 who are economically active in agriculture may be as high as 30 per cent of all working children (ILO, 1996a). Rural girls tend to become economically active even from the age of five. In Latin America and the Caribbean, out of 15 million children involved in the labour market, 56 per cent work in the agricultural sector, between the ages 5 and 7 (Ashagrie, 1998). They work long hours and a very high proportion of them are injured at work. The most common injuries include: cuts and wounds, eye infection, skin troubles, fever, thermal stress caused by excessive heat and fatigue, and intoxications caused by exposure to pesticides while working in agricultural fields (Forastieri, 1997).

Overlapping categories of workers

Inequalities in the economic development of different countries, or of regions within the same country, have resulted in the coexistence of a number of forms of production in agriculture which can, in broad terms, be reflected by two main agricultural sectors: one is characterized by low-skilled subsistence farming in which a big proportion of the rural population is engaged; the other is often based on highly automated production processes and, as a result, achieves high productivity with relatively few workers. Important skill differences exist within the two sectors: on the one hand are to be found skilled market-oriented farmers and specialized agricultural workers, and on the other, workers engaged in temporary work and subsistence farming (ILO, 1990).

Numerous types of labour relations

A peculiarity of the agricultural sector is the lack of clear-cut distinctions between different categories of workers, and size and types of landholdings. The wide range of land ownership patterns and of methods of cultivation give

rise to numerous types of labour relations and different forms of labour force participation. This situation will also vary among developed and developing countries. The different categories of workers found will also vary within each country, and in certain cases a single farmer can be grouped in more than one category. For example, in developing countries, many smallholders complement their subsistence farming income with wages on large commercial farms during harvesting periods.

Associated operations

In most countries, agricultural work is often carried out on a family basis, involving to a great extent the worker's whole family (children, women and the elderly). A wide variety of jobs are performed by agricultural workers, especially among the self-employed in medium-size and small-scale farming. It should not be overlooked that "agriculture" covers not only farming but many other associated operations, such as crop processing, storage and packaging, construction and irrigation, pest management, poultry, piggery, fish-farming, livestock breeding and associated services including domestic tasks.

In industrialized countries, most farmers are small-scale landowners operating farms with varying technical and financial means and producing for the domestic and/or the export market. In Europe, small and medium-sized landholdings are usually family farms with a high level of productivity. They tend to employ seasonal workers at times of high demand for labour, particularly when they specialize in vegetable, fruit and grape production, where mechanization is not highly developed.

As in Europe, small-scale farmers predominate in Asia and Africa. However, their working and living conditions differ substantially from those in the industrialized world. Certain small landowners in developing countries combine small-scale agriculture with cattle-raising or waged labour in commercial plantations.² For example, the farming sector in Southern Africa is composed of smallholders generally under communal tenure and using family and non-waged labour (Loewenson, 1998). In Malaysia, there are up to one million smallholders of whom half are involved in holdings of less than 40.5 hectares (Harminder Singh, 1986).

In Latin America, the distribution is somewhat different: wage earners constitute the majority of the economically active population

in agriculture. For example, in Central America they represent 49 per cent of the agricultural economically active population, of whom 27 per cent are permanent employees, 10 per cent are partially small owners and partially temporary workers, and 12 per cent are temporary landless workers. In Brazil there are 12 million landless peasants out of a rural population of 23 million (Salgado, 1997; Gómez and Klein, 1993; ILO, 1996a).

Technological development and agriculture

One of the distinguishing characteristics of agricultural work is that it is carried out in an essentially rural environment where working and living conditions are interwoven. Agricultural work is also subject to the health risks inherent to a rural environment and at the same time to those deriving from the specific work processes involved. Agriculture is a sector traditionally neglected as a result of the emphasis placed on industrial development. This situation may be partially explained by the fact that agriculture is a very heterogeneous and multi-faceted sector and there are difficulties involved in dealing with its various safety and health problems.

Safety and health measures difficult to apply

Due to the characteristics of the rural environment and the nature of agricultural work, the differences between the various kinds of agricultural tasks are far more marked than those between the operations of other productive sectors, such as mining, construction or manufacture. The application of safety and health measures in agricultural work and agricultural workplaces is more difficult than in industry: many agricultural jobs involve multiple duties and multiple locations both on a daily and seasonal basis. Agricultural workplaces and equipment are widely varied and usually specific to the crops involved. Agricultural methods can range from those used in highly-mechanized agriculture in large-scale farms and commercial plantations to the traditional intensive methods used in small-scale and subsistence agriculture. Working conditions will also vary from country to country and among developed countries, and from countries with economies in transition and developing countries, depending on the working methods applied, available infrastructure and environmental conditions.

Specific features

Some of the specific features of agricultural work which can be mentioned are:

- most tasks are carried out in the open air, exposing workers to climatic conditions;
- the seasonal nature of the work and the urgency of certain tasks in specific periods;
- a wide variety of tasks are performed by the same person;
- the type of working postures and the length of the tasks performed;
- contact with animals and plants exposing workers to bites, poisoning, infections, parasitic diseases, allergies, toxicity and other health problems;
- the use of chemicals and biological products;
- the considerable distances between living quarters and workplaces.

Dependent on weather changes

Most of the work is done in the open air and consequently workers are exposed to all types of weather, according to the season. Although the introduction of new equipment and new forms of work organization have made considerable progress in agriculture, dependence on weather changes to perform agricultural work proves to be an obstacle to more efficient operations and may completely modify working conditions, making them difficult and sometimes dangerous (e.g. a rainstorm while harvesting, a sudden gust of wind during the application of pesticides, or lack of rain, etc.).

Safety measures and training out of step with technology

Technological change in agriculture has not always been accompanied by investment in the protection and improvement of workers' safety and health. Although it has brought about a reduction in the physical drudgery of agricultural work, it has also introduced new risks to the sector mainly associated both with the use of more sophisticated agricultural machinery without adequate safety measures, information and training, as well as the intensive and indiscriminate use of chemicals in agriculture. The outcome has been not only an increase in the number of serious injuries and death but also the destabilization of the ecosystems of large areas of the world due to a non-sustainable approach to agricultural development.

Lack of supportive technology

As international trade intensifies, the agricultural sector is obliged to modernize the techniques used in the planting, care, treatment and harvesting of crops, as well as in animal husbandry. The introduction of even more complex machinery and numerous chemical compounds, each with harmful human and environmental effects, takes place without the provision of either appropriate information or appropriate training, as the supportive technology found in other industries is likely to be missing. In addition, traditional techniques in agriculture often obstruct the application of modern techniques, since the agricultural sector suffers from a certain technical backwardness as compared with industry.

Most new technology designed for industrialized countries

Current ergonomic research and its application in developing countries are mainly focused on the industrial sector. Little research has been conducted in agriculture and even less at the small-scale farmer's level. There is limited information on the extent to which ergonomics may alleviate the constraints on manual operations for crop cultivation. In most developing countries, the problems encountered due to the transfer of technology have ergonomic implications. Most new technology comes from industrialized countries and can rarely be expected to be appropriate either to the climate or the body size, physical strength, working and cultural habits of workers in developing countries. In many cases, the equipment and tools have been designed for a population which differs from the actual users. There are also great variations in body measurements within developing countries where different ethnic groups are present. These variations may either have limited ergonomic implications or lead to serious ergonomic problems both in terms of the equipment and the users, causing accidents and injuries. Furthermore, through the increase of technology transfer in developing countries, imported or second-hand machinery often comes with dilapidated or missing safety guards and the maintenance of machinery is usually poor. Farm implements, suitable for a particular operation, are used for others for which they are inadequate, or are used even when badly damaged. Unsafe, unhealthy and uncomfortable situations which are also inefficient, usu-

ally occur because the equipment, environment and organizational factors are not properly matched to those who use them.

Occupational accidents and injuries

Agriculture is one of the most hazardous occupations worldwide. In several countries, the fatal accident rate in agriculture is double the average for all other industries. According to ILO estimates, from a total of 335,000 fatal workplace accidents worldwide, some 170,000 agricultural workers are killed each year (NSC, 1995). Contrary to mining, where fatal accidents have decreased in a number of countries, agriculture mortality rates remained consistently high in the past decade both in industrialized and developing countries.

Inadequate training and safety systems in developing countries

Machinery such as tractors and harvesters have the highest frequency and fatality rates of injury. Exposure to pesticides and other agrochemicals constitutes one of the major occupational risks causing poisoning and death and in certain cases work-related cancer. Other hazards are due to multiple contact with animals, plants, poisonous animals and biological agents which may give rise to allergies, respiratory disorders and lung diseases, zoonotic infections and parasitic diseases. Severe injuries such as wounds and fractures are also occasionally caused by animal bites and kicks (Choudhry, 1989). Noise-induced hearing loss, musculoskeletal disorders (repetitive motion disorders and back disorders), stress and psychological disorders are also frequent. This situation is particularly evident in developing countries where education, training and safety systems are largely inadequate to provide coverage to the sector.

Injury and mortality in non-chemical accidents

The Brazilian Institute on Occupational Safety and Health, FUNDACENTRO (Meirelles, 1994) conducted a study on occupational accidents in the rural sector in the eight states where there is a higher concentration of agricultural activities for the period 1987 to 1990. The study showed that 39.45 per cent of the total injuries were due to manual tools, 88 per cent of which were cutting tools, and that 12.68 per cent of all injuries were caused by acci-

dents with machinery of which 38.56 per cent were tractors. The rest were minor injuries due to different causes. In Chile, the labour inspectorate reported in 1993 that injuries due to machinery and tools accounted for over one-third (35 per cent) of all cases of occupational injury (Ministry of Labour, 1993). In South Africa, according to an assessment of the annual reports of the Workmen's Compensation Commissioner (1987-89), mortality in farming due only to non-chemical occupational accidents was twice that of other industries (London and Myers, 1995; Myers, 1990).

Death rates still high in Australia and the United States

Agriculture is a particularly hazardous occupation even in the industrialized countries. The National Safety Council of the United States and the Australian Occupational Safety Institute, WorkSafe Australia, have ranked agriculture as one of the three most hazardous industries. Work-related agricultural fatalities were examined as part of a larger population-based study of all work-related fatalities in the period from 1982 to 1984 in Australia (Erllich et al., 1993). A total of 257 farm-related fatalities were identified, of which 223 came from the waged-labour force (19.4 deaths per 100,000 per year) and 34 deaths were registered for children less than 15 years of age. Mobile mechanical equipment (particularly tractors) were the main fatal agent, and roll-overs accounted for many of the fatalities. Although farmers and farm workers in the United States comprise only 3 per cent of the workforce, they suffered 7.4 per cent of work-related deaths for the period 1990-95, according to the US National Safety Council (NSC, 1990 and 1995).

Nitrogen dioxide in silos

In farms where silos are used to store grain, there is a significant risk of death by asphyxia. In the newly filled silo, various very toxic oxides of nitrogen begin to accumulate in the head-space of the silo within hours of filling it and may persist there for a week or more. Levels of nitrogen dioxide that are hundreds of times higher than industrial standards have been documented (Lowry and Schuman, 1955). Falls followed by asphyxia arising from the inhalation of grains have also been reported.³ Many countries have long lists of recommendations concerning the risks of working in silos, but they are usually not properly followed.

Agrochemical exposure

Exposure to pesticides and other agrochemicals constitutes one of the major occupational risks, accounting in some countries for as much as 14 per cent of all occupational injuries in the agricultural sector and 10 per cent of all fatal injuries (ILO, 1996a). The magnitude of health damage caused by agrochemical exposure will vary according to the type of crop cultivated, the type of agrochemical used, the mode of application/exposure, individual susceptibility and climatic conditions. Some of the widely used substances are highly toxic according to the hazard classification of the World Health Organization (WHO), and many are banned or severely restricted in industrialized countries. There are limited reliable data on the extent of pesticide-related illness both in developed and developing countries, due to difficulties in the accurate reporting of cases, which lead to underestimation. For example, the United States Environmental Protection Agency estimates at between 20,000 and 300,000 the annual number of acute pesticide poisoning cases among agricultural workers, and the WHO places the total cases of pesticide poisoning at between 2 and 5 million each year, of which 40,000 are fatal (ILO, 1994).

In Costa Rica 4 kg of pesticides per capita

Developing countries consume more than 20 per cent of the world production of agrochemicals and are responsible for approximately 70 per cent of the total number of cases of acute poisoning occurring in the world, which corresponds to more than 1.1 million cases. During the 1980s, the importation and use of agrochemicals in the Central American region reached an annual average of 53.6 million. In Costa Rica alone, as much as 4 kg of pesticides per capita was used annually during the last decade, eight times the 0.5 kg estimated for the whole world population and twice the average use for the total Central American region. In Central America alone, 27,745 cases of acute poisoning were registered between 1980 and 1987 and this rate corresponds to more than 2,000 cases per year (Wesseling, 1994).

In Panama 25 per cent of permanent disabilities in agriculture

According to a national survey on occupational safety and health in agriculture carried out in Panama, the rural population exposed to

pesticides in 1993 was 574,757, of whom only 5 per cent had access to compensation from the Social Security System (Díaz Mérida, 1992). The Social Security records refer to only 15 per cent of the total cases. Up to 20-25 per cent of all permanent incapacities entitled to compensation occurred within the agricultural sector in the same period. In another study undertaken by the National University of Panama for the period 1980 to 1989, the rate of acute poisoning due to occupational exposure was 26.2 per cent (Díaz Mérida and Tristan, 1996). According to data from the Ministry of Health of Panama, the rate of intoxications due to pesticide exposure was 7.7 per 100,000 in 1990 and 5.6 per 100,000 in 1995. According to estimates from the Social Security Institute, the rate for 1995 should have been 3,000 per 100,000 (Díaz Mérida, 1996).

During 1994, 237 cases of pesticide poisoning were registered by the Social Security Institute of Guatemala (Ruano Meléndez, 1995) with three occupational fatalities. Another study conducted by the Faculty of Medicine from the National University of Guatemala based on data from the Ministry of Health and the Social Security Institute showed that in the period from 1986 to 1990, there were 5,571 cases of intoxications from pesticides with a fatality rate of 3.23 per cent. In 1994, a survey on the use of pesticides undertaken by the Ministry of Health concluded that it was not possible to have an accurate estimation of the number of intoxications from occupational exposure in the country due to under-reporting.

Under-reporting

Although the figures provided above give an idea of the magnitude of the problem, official data on the incidence of occupational accidents and diseases are imprecise and notoriously underestimated in agriculture, irrespective of the level of development of the country. This situation is more acute with regard to occupational diseases. There are different arrangements for the reporting of occupational accidents and for occupational diseases: accidents can be readily identified at the moment they occur, while occupational diseases require medical diagnosis.

Chronic conditions more difficult to evaluate

Information on workplace accidents is derived from statutory reporting and from social security claims, and thus does not reflect

the numerous unreported non-fatal and minor injuries since only a small proportion of accidents in the workplace are fatal. Such information, however, is relatively reliable because almost all fatal occurrences come to the notice of the enforcement authorities. In the case of agriculture, this situation may be explained by the fact that particularly hazardous work is likely to leave visible and immediate effects such as serious accidents and acute poisoning, whereas other hazards are more difficult to evaluate. The latter would apply in the case of chronic ill-health, conditions due to exposure to noise, vibration, organic dusts or cumulative low exposure to pesticides, which all lead to difficulties in the diagnosis and therefore to under-reporting of occupational and work-related diseases in most countries.

Under-reporting is also partially explained by the difficulties involved in establishing the employment status of agricultural workers: piece-rate, full-time or part-time work, seasonal or migrant worker, etc. In many countries too, agricultural workers are excluded from any employment injury benefit or insurance scheme. Furthermore, the administrative machinery for collecting injury records and the incentive to report injuries are also insufficient. Nevertheless, agricultural workers suffer markedly higher rates of accidents and fatal injuries than workers in other sectors with very little resources for compensation. Fewer than 20 per cent of the world's agricultural wage earners are covered by one or more of the nine contingencies of the ILO's Social Security (Minimum Standards) Convention, 1952 (No. 102).⁴

Occupational and work-related diseases

There is a considerable variation worldwide in the range of diseases arising from agricultural work. In turn, they are produced by a wide array of features peculiar to each country or region: climate, fauna, population density, living conditions, eating habits, standards of hygiene, levels of education, occupational training, working conditions, technological development, and the quality of and access to services, etc. The major diseases occurring in agricultural work are infectious disorders such as those transmitted by contact with domestic or wild animals (zoonosis), respiratory infections, dermatosis, allergies, cancer, illnesses arising from working in the open air, poisonings, as well as musculoskeletal disorders arising from repetitive work or working in unsuit-

able positions, carrying heavy loads, excessively long hours, and noise and vibrations. Such diseases lead to a significant expenditure of energy, premature ageing, absenteeism, declining productivity and high social and health costs at the national level.

Infectious and parasitic diseases

Zoonosis constitutes a serious public health problem, especially in developing countries. It includes some of the most widespread and serious diseases in the world. Past experience indicates that in the future they will play a growing role in the pattern of human morbidity (Choudhry, 1989). Diseases originating from animals are often unnoticed, either because animals themselves do not develop the illness or because there is a long interval before symptoms begin to appear in humans. Contamination can occur through direct hand contact with the animal or with substances derived from it (such as hair, meat, carcasses, bones, and the products of rejection, abortion or slaughter) as well as by contact with contaminated environments. These illnesses can be extremely serious in humans, and their care burdensome. Treatment can often be complex, requiring prolonged periods in a hospital, as in the case of bovine tuberculosis, tetanus, and tularaemia.⁵ Some of those diseases need surgical treatment, such as hydatidosis,⁶ as well as intensive post-surgical care on account of the sensitive organs affected, such as the lungs, the liver, and the central nervous system. Other diseases are highly contagious and can lead to epidemics such as malaria, brucellosis (undulant fever), salmonellosis,⁷ or Newcastle virus disease,⁸ and even if their treatment is relatively simple, the social cost of such epidemics is very high. Listerioses⁹ are the cause of miscarriages or, if contracted at an advanced stage of pregnancy, of serious congenital defects.

Tetanus, typhus, malaria, amoebiasis, Lyme disease

Parasitic diseases present in the workplace stem from a variety of causes: the ingestion of parasitic eggs (such as hydatidosis, amoebiasis)¹⁰ as a result of the contamination of food or of hands through dirty tools or from animals and animal derivatives is one source. Certain larvae present in the soil in hot and humid areas can enter the body through exposed healthy skin and the lining of the nose, mouth and conjunctiva when working in rice fields, mush-

room areas and other terrains infested with these parasites. The risk of such contamination is increased in areas of high temperature by the problems posed in wearing protective clothing and boots which may themselves increase body temperature and provoke excessive perspiration. Several parasites can penetrate the bodies of workers through biological vectors, as is the case of insects carrying malaria, leishmaniasis and sleeping sickness. Other infectious diseases which can be contracted in the agricultural working environment have a serious prognosis: tetanus, rabies, typhus, Q fever and Lyme disease are telling examples. In France, 75 per cent of recognized occupational diseases in agriculture are infectious or parasite-borne, leading frequently to partial or total occupational disability.

Skin disorders

Skin disorders can result from the entry of pathogenic agents into the body, either through a lesion (a bite, a scratch, a sting) or through a healthy skin surface. Fungal infections may be directly contracted from infected animals or developed in areas of skin maceration. This maceration results from humidity and heat, contact with sugar from fruit, and excessive perspiration due to the use of waterproof clothing such as rubber boots and gloves. Such lesions are often difficult to treat, take long to cure and are contagious. Other agents cause acute, subacute or chronic dermatosis. Contact dermatitis is the most common occupational dermatological infection in agriculture and is caused by the action of solvents and other products present in pesticides and in certain vegetables. Allergic dermatitis can be caused by certain flowers produced in ornamental floriculture; chrome contained in rubber boots or gloves; veterinary antibiotics; pesticides (fungicides of the dithiocarbamates group (Koch, 1996)); and by disinfectants and soaps. They produce lesions through local and occasionally airborne contact. Occupational acne is due to the handling of motor oil and grease or the moving parts of agricultural machines. Certain photosensitive substances, such as mineral oils and greases and antibiotics, can produce acute inflammatory cutaneous lesions when exposed to the sun.

Respiratory disorders

Respiratory disorders in agriculture cover a wide range of clinical manifestations, from benign disorders to serious respiratory insuffi-

ciency including occupational asthma. The various organic allergens can, furthermore, be carriers of bacteria, moulds, toxins and pesticides, and transport them into the respiratory tract, thus creating even more serious lung difficulties. Working in confined spaces such as glass-houses and silos can expose workers to high concentrations of allergenic dusts. Gases used as pesticides or produced by a reaction when pesticides are applied (such as hydrogen sulphide, phosgene, chlorine, etc.) affect directly, through irritation, the walls of the respiratory tract, provoking asthmatic reactions among people suffering from bronchial hyperactivity.

Occupational cancer

Occupational cancer in agriculture can present as a delayed complication of certain diseases whose origin is occupational, or it can arise through direct exposure to a variety of risk factors. Numerous biological agents have been implicated in the development of cancer in humans and some of them are closely related to working conditions in agriculture. Urinary bilharziasis, contracted through work in flooded areas is a cause of cancer of the bladder, while the intestinal cancer leads to hepatic, oesophageal, gastric and colorectal tumours (Meeting of Experts, 1994). Faciolosis induces cancer of the bile ducts among cattle workers who are in contact with surface waters (such as lakes, water-channels and swamps) contaminated by flukes from the stools of infected cattle, goats and sheep. Pesticides and fertilisers have been associated with the appearance of gastric and bronchial cancers (Cocco, Ward and Buiatti, 1996) (e.g. arsenical fungicides), as well as to non-Hodgkin's lymphomas (phenoxy-acetic herbicides (Zhong and Rafnsson, 1996; Folsom, 1996; Persson, 1996).

Lifting and carrying of loads: musculoskeletal disorders

The adoption of awkward and uncomfortable postures and the carrying of excessive loads cause numerous but largely unreported musculoskeletal disorders in agriculture. The carrying of heavy loads can cause serious musculoskeletal disorders, such as chronic back pain, chest pain and miscarriages. Carrying loads is one of the major chores of rural woman workers in developing countries. They can spend over 20 hours a week on trips for collecting water, firewood, laundry, livestock tending and marketing goods, carrying weights

of more than 35 kg on their heads and backs over considerable distances.

Back injuries and low back pain are mainly associated with heavy physical work and repeated lifting and twisting as is the case with agricultural activities. Human effort provides more than 70 per cent of the energy required for crop production tasks in developing countries (FAO,1987), and weeding utilizes about 20 per cent of the total human energy used in crop production in India (Gite and Yadav, 1990). Traditional tools and methods require high human energy input. Knee lesions often appear where work is undertaken while kneeling and when it involves walking on uneven surfaces. In agriculture, a number of operations originally designed to be carried out in a sitting position are actually performed standing. Seats are usually uncomfortable either due to poor design or to damage caused by misuse or age. Bench heights for manual work should be related to the manual work being carried out and the elbow height of the worker. If not, the result is excessive strain and fatigue, increasing the possibility of an accident.¹¹ Chronic musculoskeletal disorders are the type of injuries that are very likely to develop cumulatively in time and most of them can lead to permanent disability.

Impairments due to noise and vibration

Noise in agriculture is the result of high frequency vibrations produced by machines. At full power the motor produces far more than the 85 dB(A) established as the limit for hearing loss prevention (Darabont, 1983). The usual level is 95 and even 100 dB(A) for long periods, both in cabinless tractors and in those with cabins where there are additional resonance phenomena (Márquez Delgado, 1986). The effects of noise are auditive and extra-auditive. Auditive effects bring about reduced awareness of other simultaneous noises; e.g., cries warning of a danger, auditive fatigue during which a worker temporarily presents a higher hearing threshold, and occupational deafness. Extra-auditive effects appear after several hours of exposure and consist of irritability and psychological stress. To these should be added a reduced speed of reaction in psychomotor tasks, especially when simultaneous monitoring of several different elements is required, as obtains in the case of agricultural machine drivers who need to adapt the machine trajectory to the irregularity of the ground, or during specific operations with tractors and trailers, or

when the driver is carrying out operations jointly with other workers (Desoille, Scherrer and Truhaut, 1992).

Relation between general diseases and work-related diseases

Socio-economic, cultural and environmental factors also determine the working and living conditions of farmers and agricultural workers. Environmental pollution causes occupational health and public health hazards to the workers, their families and the communities, farm and domestic animals, as well as the ecosystem. Local and global environmental changes related to the degradation of natural resources can have a long-term impact on the availability of food.

The interaction between poor living and working conditions determines a distinctive morbidity – mortality pattern among agricultural workers. Such a pattern is due to the combination of malnutrition with diseases prevalent among the rural population (such as malaria, tuberculosis, gastro-intestinal disorders, fluorine intoxication, endemic goitre, anaemic deficiencies, etc.), occupational disorders, and complications arising from undiagnosed or untreated diseases.

Reduced life expectancy

Closely related to workers' malnutrition and poor health is working capacity. Even if certain developing countries have reached higher levels of economic development, nutrition and health constitute an important problem area characterized by the vicious circle of low productivity, low salaries, malnutrition, diseases, and low working capacity. These problems are especially important in the agricultural sector where a great deal of the work is manual or semi-mechanized and is closely related to working capacity. General diseases affect the working ability and further decrease working capacity when associated with other occupational-related conditions such as heat stress. Working capacity (maximal aerobic capacity) is reduced in proportion to body size, but sustained working capacity is further decreased by the effects of disease and malnutrition.¹² This situation leads to an intense expenditure of energy on individuals who do not have the opportunity to recuperate, reducing their life expectancy as compared with other workers.

Work in the open exposes workers to wind, rain, cold, heat and ultraviolet radiation. These

agents can lead to a series of health problems which, even if they cannot strictly be classified as occupational health problems, cause absenteeism, low productivity and a lowering of the organism's resistance to well-known disorders. Rain and cold can lead to respiratory infections as well as to frostbites which leave skin lesions liable to become infected. Exposure to the sun can cause burning, diffuse redness on the exposed parts of the skin, associated with cutaneous atrophy which may lead to localized thickenings after several years and varying degrees of sunstroke. Heat causes a dilation of superficial blood vessels and thus dehydration through excessive perspiration (sometimes rendered more severe by excessively protective and waterproof clothing), as well as leg oedemas, cramps and fainting, and facilitate poisoning through cutaneous absorption and the spread of pesticides inside the organism. The wind carries bacteria, parasites, mineral and vegetable dust and fungal spores. The negative effects of long hours of work may be increased by the effect of extreme climatic conditions. Malnutrition, hot and humid weather, and endemic diseases are all contributing factors to the capabilities and performance of agricultural workers. Studies on the effect of heat exposure on workers' health have shown that temperatures that differ even minimally from the comfort zone tend to increase the risk of accidents.

Access to health services

Technological development in the last 50 years has greatly improved urban living conditions, although this does not apply to rural communities. With economic development, health resources have been oriented mainly towards the improvement of secondary and tertiary levels of attention, focusing on the development of medical technology (for surgical procedures, tests and specialized medical disciplines, genetic screening, research and hospital facilities, etc.). Limited funds are available in those areas where more impact could be made among the rural populations such as preventive and primary health care. Specialized health services and big hospitals tend to be located in large urban centres and it is often difficult for rural communities to have access even to essential health services. The drift of the population to urban centres has contributed to a concentration of services for those who work and live in large urban centres with the resulting imbalance in the distribution of health resources between urban centres and rural

communities to the detriment of the rural sector. This is particularly true in developing countries as compared to industrialized countries. Small rural health centres or rural hospitals cannot offer the same services as their large urban counterparts and often find it difficult to attract and retain staff.

No voice in decision-making

In consequence, health status in rural areas is below that found in urban centres in both developed and developing countries. Agricultural workers may live in extremely primitive conditions, in areas where roads are non-existent or inadequate and where transportation is difficult. A majority of the rural population in developing countries have an inadequate diet and are exposed to both endemic and occupational diseases. The high prevalence of epidemic and endemic diseases in most rural areas further aggravates rural communities' poor health and misery. This situation is reflected in the numerous communicable and vector-borne diseases, including diseases and health impairments which arise from poor sanitation, inadequate housing, malnutrition and a wide variety of parasitic and bacterial infections affecting the entire population. The mortality rate is also higher in rural areas (ILO, 1995). Rural workers often lack information on the health hazards they face. In many countries, rural workers' organizations do not always have the opportunity to participate actively in policy-making, nor do they have any influence on the decisions taken on their behalf. The environment in which rural people work and live, their standard of living and their nutrition are as important to their health as the services available to them.

Coverage of agricultural workers in national legislation

An overview carried out by the ILO on national legislation in member States showed a wide diversity of national approaches to legislation addressing safety and health in the agricultural sector. According to available information, comprehensive legislation is limited. Only a few countries have developed such a set of standards applicable to agriculture.¹³

Due to legislative developments in a number of industrialized countries, industry-specific safety and health legislation is being progressively repealed and replaced by a framework statute covering all industries

through a principal enactment, generally across a wide range of economic sectors, including agriculture. Safety and health issues related to specific hazards or industries are being addressed in regulations and codes of practice promulgated under this framework enactment. Most of the specific regulations or decrees related to agriculture, which are all subordinated to Safety and Health Acts or directly to Labour Codes, concern safety of machinery and equipment (mainly tractors and harvesters) and chemicals (in particular pesticides) or biological agents used in agriculture. Other regulations relevant to agriculture refer to the prohibition of the employment of certain categories of workers, prohibitions with regard to the operation of certain types of equipment for those under 18 years of age, maternity protection provisions, social security measures and working conditions (wages, hours of work, etc.).

Self-employed, family members, seasonal workers not covered

Agriculture tends to be omitted or specifically excluded from the general labour laws and the occupational safety and health regulations of many countries. In certain cases, general laws such as Occupational Safety and Health Acts give a marginal reference to the sector; in others there are few specific regulations or decrees. The general labour laws of a number of countries exclude agricultural workers completely or partially, and in certain countries there are no safety and health laws applicable to the agricultural sector at all.¹⁴

While in some countries safety and health legislation does not apply to the agricultural sector as a whole, there are others where it applies only to certain categories of agricultural workers. Even though a small number of countries specifically exclude agricultural work from the coverage of their labour codes, in many others there are few if any provisions that are applicable to workers who are not working under full-time contracts of employment. In many countries, only those employed under contracts of employment are entitled to the complete protection offered by the statute. For example, rights, such as the right to be trained, to elect a health and safety representative and to be medically examined periodically are generally only available to "workers" under this type of legislation. As a large number of those who work in the agricultural sector are family members and temporary and seasonal workers,

legislative protection will generally have limited or no effect on them. The legislation in many countries does not cover the self-employed as it is restricted to those employed under "contracts of service". However, it has to be mentioned that certain countries extend the scope of the protection offered by their labour laws beyond the full-time waged employment relationship.¹⁵

It is very common for labour codes and safety and health laws to make special provision for women workers, particularly when they are pregnant or nursing. In most legislation, pregnant and nursing women are protected against certain forms of hazardous work, such as those involving heavy lifting or exposure to hazardous chemicals and ionizing radiations. Employers may be required to transfer women from such work to other work that does not involve such safety and health risks. However, these provisions are of general application and do not specify agricultural work. In some countries, only permanent agricultural workers are covered by these provisions. Often the coverage is provided by separate legislation. For example, in some Asian countries agricultural workers employed in plantations are specifically covered. However, in many countries agricultural workers are not covered and are specifically excluded from maternity protection regulations.

Regional standards

Regional initiatives by the European Union concern mainly market relations and essential economic requirements for the implementation of common agricultural policy mechanisms. The Council's Directive on Safety and Health at Work of 1989 (EEC, 1989) applies to all sectors of economic activity, including agriculture, without prejudice to more stringent European Union provisions to be adopted in the future. A number of safety and health directives based on this Framework Directive have been adopted since. However, existing Council Directives on safety and health at work, addressing specifically agriculture, deal mainly with pesticides, machinery safety and ergonomic design of agricultural and forestry machinery (Manos, 1997). On a number of occasions, the need for a directive on the protection of workers in agriculture has been discussed within the European Commission and its Agricultural Committee. However, an initiative on the subject has not been officially proposed to date (Vogel, 1997).

Workers' and employers' participation in health and safety through collective agreements

Collective agreements are an important source of employers' and workers' labour rights and responsibilities. In the area of safety and health, however, the major source of rights and responsibilities tends to be statutory and quasi-statutory instruments and standards. This is particularly the case in the agricultural sector in many countries, where low rates of unionization make collective bargaining the exception rather than the norm.¹⁶

An examination of both national laws relating to collective labour agreements and the agreements themselves has revealed little information as to the way in which safety and health in agriculture are covered. Generally speaking, collective agreements make reference to certain safety and health issues such as protective clothing, safety equipment, transport in the event of accidents, first aid, safety procedures, safety committees, medical examinations, accident insurance and certain allowances. Competent authorities in the area of safety and health in a number of countries have produced guidance material to help employers and trade unions reach agreement on safety and health issues in the process of collective bargaining. Negotiated agreements can be very detailed, covering wages, working time, rest days, leave, conditions of transport of workers, health and safety at the workplace, occupational injury benefits, etc. However, many collective agreements in agriculture do not cover health and safety issues. At most they are likely to refer to the legislation on the subject.

In France, a "pool of employers"

In general, collective bargaining agreements are concluded in those sectors and enterprises where permanent employment is significant and tend to reflect the concerns of permanent workers. Temporary and seasonal workers, who are often in the majority, may not be covered at all or only partially. Their frequent change of employers is considered a major obstacle. An attempt to overcome this complication has been made in France with an amendment to the Labour Code (section 127/1) which introduces the notion of a "pool of employers". Such a pool can legally contract with one or more workers under one collective agreement which specifies the terms and conditions of employment; details regarding times and

periods of work are subsequently agreed upon by the respective employers. Several agricultural enterprises can thus share one or more workers, the full employment of whom might be beyond the capacity of any one enterprise (Bourquelot, 1987).

The participation of workers, employers and their representatives in occupational health and safety varies greatly from country to country. In developed countries, legislation does generally impose a responsibility to involve workers and employers in safety and health committees in agricultural enterprises as well as in national programmes of prevention of work-related accidents and illnesses, but in most cases their activity is very limited in this field.

Repercussions of agricultural production processes on the environment

Environmental pollution caused by the inadequate selection and excessive use of agrochemicals can have widespread negative repercussions, such as the destruction of biological species and changes in the natural biological balance. Unfortunately, this may be the result of methods adopted by some large plantations mainly concerned with producing to meet the standards of international markets rather than adopting a sustainable approach to agricultural development.

The methods used in these cases involve intensive and extensive monoculture which reduces the variety of vegetable species over a large area and makes a selective destruction of local pests. The reduction of the variety of flora and fauna breaks the cycle of in-built pest control and leads to the need for increased chemical controls. However, commercial pesticides remove the most vulnerable pests, leaving behind the resistant ones. Therefore a treadmill effect is set in motion requiring ever more harmful pesticides leading to renewed secondary effects. Intensive agriculture also exhausts the specific elements present in the soil which are necessary for crop cultivation. As the soil becomes less fertile, it requires more regular and concentrated doses of chemicals such as fertilizers to develop the crops. A vicious circle takes hold, increasing both production costs and the costs of maintaining agricultural workers in good health. It also causes changes in the geographical relief and in riverbeds. It destroys plants whose deep and abundant roots sustain the soil, thus allowing the wind and the heat to erode the soil and dry it

out or causing flooding through land drift and the destruction of river banks.

Organochloride pesticides (DDT, aldrin, etc.) are extremely stable compounds and, even if many countries have now prohibited them, they can remain in the soil for 30 years and more. They are gradually absorbed by crops and accumulate there before the contamination moves along the entire food chain finally reaching the consumer. The main sources of contamination are synthetic fertilizers containing nitrates which contaminate the soil and groundwater. Nitrates in drinking water and food have important health implications such as haemoglobin disorders in infants which can provoke occasional mortality (blue baby syndrome) and in some instances birth malformations, as well as chronic effects including blood cancer (non-Hodgkin's lymphoma) and stomach cancer. Other sources of contamination include animal manures, human wastes, nitrogen-fixing bacteria, plants and other geological sources.

Challenges in providing safety and health services to agricultural workers

In order to achieve sustainable agricultural growth, the productivity of agricultural workers should be raised by supplying them with the means to meet their basic needs, providing them and their families with adequate working and living conditions, protecting their health and welfare, as well as the environment in which they work and live. Investment on occupational safety and health is an added value which provides for improved working conditions, higher labour productivity and healthier labour relations. Product quality standards should go hand in hand with improvements in working conditions. In turn, working conditions in agriculture can be significantly improved in a viable and cost-effective way through safety and health measures.

An emphasis on prevention

Occupational safety and health in agriculture needs to be addressed with a well-defined strategy and must be integrated into a rural development policy involving both big commercial plantations and small-scale farming. The progressive extension of occupational health services to workers in agriculture requires the implementation of effective national policies, targeted programmes and strategic plans of action with an emphasis on

prevention. The delivery of occupational health services for the rural sector should be integrated into the primary health care structure. The adoption of adequate labour legislation and the introduction of social protection measures are major steps in that direction. Such an approach should provide flexibility in the implementation and support for the empowerment of the ILO social partners in particular rural workers and their organizations. The long-term impact and success of the interventions should be based essentially on joint national responsibilities of governments, employers and workers and their organizations in order to guarantee sustainability. The identification of new opportunities for action, the creation of alliances among social partners, their mobilization and empowerment through the promotion of a sense of commitment and ownership, are crucial for trade unions and their members.

Technical cooperation activities: The ILO's Central American Project on Agriculture

The purpose of technical cooperation activities is to encourage national action to improve working conditions for the protection of workers' health and to provide assistance to member States in the implementation of specific programmes and projects in the field of occupational safety and health on a request basis. Technical cooperation may take various forms. Such projects may deal with the promotion of occupational health and safety policies, the updating of legislation, the establishment of national safety and health institutes, the improvement of safety and health inspection services, the promotion of training programmes and in-service training, the provision of ad hoc expert services, and direct support to enterprise-level action.

In order to respond to the need for a sustainable approach to agriculture, a model strategy for occupational safety and health in agriculture was developed and tested within the framework of an ILO Central American Project on Occupational Safety and Health in Agriculture, launched in September 1993. This pilot project has demonstrated the need for an integrated approach of occupational, public and environmental health, consistent with current trends at national and international levels. The lessons learnt in this pilot phase will be used to develop similar projects in other regions of the world, mobilize international cooperation and

promote network arrangements in order to elaborate progressively an international programme on occupational safety and health in agriculture in the context of the new InFocus Programme SafeWork.

The target beneficiaries of the project were rural workers and their families (women and children) including rural temporary workers. Special attention has been paid to the participation of rural women in the project. A number of them were trained as trainers and were actively participating in the project. Aware of the need for a holistic approach to deal with the agricultural sector, the ILO project promoted inter-institutional coordination involving all the relevant institutions at a national level: Ministries of Labour, Agriculture, Health and Environment, social security institutions, rural trade unions, employers' organizations and NGOs. There was a close involvement of the Ministries of Education and other training institutions in the development and implementation of training materials.

The project strategy was oriented towards the implementation of a national policy for the protection of the safety and health of rural workers, the prevention of occupational accidents and diseases in agriculture and the protection of the environment. It carried six main components:

- a legislative framework;
- a national policy on occupational safety and health (OSH) in agriculture;
- a system of classification of chemicals;
- a preventive health surveillance system;
- the strengthening of national capacity through information and training; and
- an environmental protection approach to deal with agriculture.

The activities carried out by the project supported the improvement and strengthening of the institutional capacity and establishment of a Tripartite National Committee on Agriculture for an integrated management approach in order to develop a national programme on OSH in agriculture.

Awareness, information and training on OSH for rural workers, inspection services, health care personnel and extension workers were used as the main tools. A focal point at each information centre has been trained in the use of the database. The project placed an emphasis on the development of a sustainable approach to agriculture which foresees the use

of different and complementary agricultural methods which should be safe for the worker and his or her family, safe for the consumer, protect the environment and be productive at the same time. Therefore, safety in the use and management of agrochemicals, alternative methods of pest control, integrated pest management, organic farming and other agro-ecological methods were introduced as part of the training programme. As a high proportion of occupational hazards among agricultural workers in Central America is due to exposure to agrochemicals, the training included safety in the use and management of agrochemicals in agricultural work, alternative methods of pest control, agrochemical waste management, organic agriculture and environmental protection measures. Safety data sheets for the agrochemicals most frequently used in the Central American Region were developed in Spanish, based on IPCS (International Programme on Chemical Safety) criteria. This also included the creation and support of information systems/databases on OSH in agriculture at the local level in the inspectorates and health centres.

Close cooperation exists between the ILO and other UN Agencies such as WHO (World Health Organization) and FAO (Food and Agriculture Organization) in this field. In 1995, the ILO/WHO Joint Committee on Occupational Health identified a number of areas for intensified cooperation. Concerning agriculture, it was suggested to develop "joint or coordinated activities at the international, national and regional levels, to improve the health of agricultural workers which would also coordinate the delivery of existing agricultural health-related programmes such as chemical safety (including pesticides), injury prevention, manual handling and the prevention of zoonosis, utilizing primary health care structures and functions supplemented with requisite expert support." For example, the ILO has collaborated with the Pan-American Health Organization (PAHO)/WHO Programme on Environment and Health in the Central American Isthmus (MASICA/PLAGSALUD) from 1996 to 1998 in this area in order to avoid the overlapping of activities and with the purpose of achieving a better impact through combined efforts. A number of successful joint activities have been carried out in those areas where the projects have common objectives.

ILO new standards on agriculture

There is worldwide recognition that agriculture is a particularly hazardous sector together with mining and construction. International standards and up-to-date codes of practice already exist for the latter two. Although the ILO has also shaped and adopted a series of codes of practice and guides of direct concern to occupational safety and health in agriculture and related issues since the 1950s, some of them need to be revised. More than 20 ILO Conventions and Recommendations concern OSH issues relevant to agriculture or deal with aspects of agricultural workers' working conditions (ILO, 1999). However, in spite of the multitude of related standards, and although agriculture is covered along with other sectors by the ILO's framework Convention on Occupational Safety and Health, 1981 (No. 155), which applies to all branches of economic activity, there is no Convention dealing comprehensively with the safety and health problems of agricultural workers. The Governing Body of the ILO therefore, in its 271st Session, decided to include in the agenda of the 88th International Labour Conference (2000) the discussion of a proposed convention and recommendation on safety and health in agriculture.

The promotion of the new standards on agriculture would provide the impetus for the development of national programmes on agriculture. The ILO's past experience both at international and national level has been taken into account for the development of an international programme on agricultural safety and health under the umbrella of the new InFocus Programme SafeWork (ILO's Global Programme on Safety, Health and the Environment). Also envisaged within the programme is the establishment of networking arrangements among developing countries and among countries with economies in transition and industrialized countries to support one another in dealing with policy-making in rural development, safety and health and environmental management in agriculture. The purpose would also be to allow those in charge of OSH programmes in agriculture to upgrade their skills, update their knowledge, and have contacts at a national and international level, including tailor-made training programmes. A prerequisite for such a global network would be the identification of resource persons, key institutions and social partners all of whom could be involved in the mobilization of an integrated management approach to safety and health interventions in the field of safety and health in agriculture.

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Notes

¹ This paper is drawn from *Safety and health in agriculture*, Report VI (1), prepared for the discussion of new standards on the subject, placed as an item on the agenda, International Labour Conference, 88th Session, Geneva, June 2000.

² Accounting for 85 per cent of the agricultural economically active population in Uganda, according to Sekimpi, 1992.

³ Nitrogen dioxide industrial standard is 5 parts per million. See Lowry and Schuman, 1956.

⁴ Namely medical care, sickness and maternity benefits, family benefits, unemployment benefits, employment injury, invalidity and survivor's benefits, and old-age benefits.

⁵ Bacterial disease transmitted by rabbits.

⁶ Parasitises contracted from dogs contaminated by sheep and camels' viscera, and due to the development of larval cysts.

⁷ Infectious diarrhoea causing dehydration in children and older persons.

⁸ Human viral encephalitis transmitted by birds.

⁹ Bacterial disease transmitted by sheep and goats.

¹⁰ Bacterial disease reaching the liver and transmitted by contaminated water or food.

¹¹ See Forastieri, V. *Ergonomic problems in agriculture in developing countries*, to be published in electronic form: www.ilo.org/public/english/90travai/sechyg/..., International Labour Organization.

¹² See note 11.

¹³ Such as Argentina, Australia, Austria, Hungary, Finland, France, New Zealand, Norway, the Netherlands, South Africa and the United Kingdom. Some are more comprehensive than others. For example, in the case of certain federal States, a number of specific standards have been enacted at the state level in provinces with a strong agricultural sector but do not cover the whole federation as in the USA (California) and Australia (Victoria). Argentina approved in 1997 an Occupational Safety and Health Act for the agricultural sector (Reglamento de Higiene y Seguridad para la Actividad Agraria). France has a very comprehensive set of relevant regulations deriving from the labour code, including a list of occupational diseases specifically for agriculture and regulations on occupational medical services for agricultural undertakings.

¹⁴ Since 1970, the Committee of Experts on the Application of Conventions and Recommendations noted the exclusion of agriculture from the safety and health laws of many countries. See ILO, 1970.

¹⁵ For example, the Chilean Labour Code 1994 makes specific provisions for seasonal, subcontracted and temporary workers, labour relations among tenants and sharecroppers. Mexican and Australian law contains similar provisions.

¹⁶ For a general discussion of collective bargaining in the rural sector, see ILO, 1996.

Health, safety and environment in agriculture: There must be dramatic improvements in standards of protection both with regard to waged workers and farmers as well as public health and the environment before agriculture can become socially and environmentally sustainable

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Waged agricultural workers

Some 440 million waged agricultural workers, 20-30 per cent of whom are women, account for 40 per cent of the global agricultural labour force, and their numbers are growing in all regions of the world (ILO, 1996a). The agricultural workforce at over 1.1 billion is still the largest workforce in the world. Child workers also form part of that labour force. These workers are the women and men who work in the crop fields, orchards, glass-houses, livestock units, and primary processing facilities to produce the world's food and commodities. They are employed on everything from small and medium-sized farms to large industrialized farms and plantations.

They are waged workers because they neither own the land on which they work nor the tools and equipment they use. In these respects, they are a group distinct from farmers. They work in an industry that is not sustainable as measured by the loss of human life, injury and ill health. In 1997, the ILO estimated that 170,000 fatalities occurred in agriculture out of a total of 330,000 fatal workplace accidents (ILO, 1999). Agricultural workers also suffer disproportionately among the 250 million and more workers injured each year (ILO, 1996b), and the 160 million and more who fall ill due to workplace hazards and exposures (Helmer and Corvalán, 1999).

The high levels of fatalities, accidents, and ill health have a considerable negative impact on agricultural productivity. The International Union of Food, Agricultural, Hotel, Restaurant, Catering, Tobacco and Allied Workers' Associations (IUF) sees a safe, healthy and environ-

ment conscious workforce as essential to a profitable and sustainable agricultural sector.

Agricultural work – and this is one of its most distinguishing characteristics – is carried out in a rural environment where there is no clear distinction between working and living conditions, unlike the case of the factory or office worker (ILO, 1979). As a result, agricultural workers and their families face added dangers, such as exposure to pesticides. However, agricultural workers – who continue to register among the highest levels among the global poor – are generally excluded from effective forms of health, safety and social protection.

Globalization

Global trade and economic pressures are eroding the already low levels of protection of this group of workers in terms of wage levels, employment security and health and safety standards. The worldwide trend towards work flexibility and the pressure to reduce labour and production costs are leading to an increase in daily and seasonal contracts. Permanent employment contracts are increasingly being replaced by temporary labour on short-term contracts with lower levels of pay and poorer levels of health, safety and social protection. The employment relationship is undermined as employers increasingly rely on labour contractors, creating a "grey area" around the employer's responsibilities and contributing to a disregard for labour legislation.

The most acute problem remains that of migrant contract labour. The agricultural workforce is already based on a large number of migrant workers, whether from different regions of a country or hired from abroad.

Women workers

Another major change in the composition of the agricultural workforce, with important implications for health and safety questions in agricultural health and safety, is the growing number of women waged agricultural workers. They constitute 40 per cent of the workforce, for example in Latin America and the Caribbean. These workers and women farmers account for a considerable proportion of the agricultural workforce in developing countries. Women are estimated to be responsible for half of global food production, but most women agricultural workers and women farmers still have no voice in key issues concerning their societies and their livelihoods. For the most part, their work is seen as unpaid family labour. They face huge legal and cultural barriers to rights to own land and to receive loans, technical assistance and often even a basic education. Even when women function effectively as heads of their households, they are often denied full legal rights. Their problems are compounded when resources are scarce, and an aggravation of rural poverty leads to an increase in domestic violence and other social problems such as alcoholism. Ensuring equality of rights for women agricultural workers and farmers is not only a matter of justice, but of food security for all.

Child labour

Another special feature of agriculture is the extent to which child workers form a major part of the workforce in many countries. The ILO estimates that at least 90 per cent of economically active children in rural areas in developing countries are employed in agriculture. A 1996 ILO report from 20 developing countries put the proportion of economically active children aged 5 to 14 years in farming, animal husbandry and related work at 74 per cent (ILO, 1996). As this report emphasizes: "The implication of these figures is clear. If the majority of working children are located in developing countries and a large proportion of these children are employed in agriculture, then the exclusion of agriculture from national legislation represents the exclusion of large numbers of children from the ambit of protective legislation" (ILO, 1996b; Helmer and Corvalán, 1999). Many child workers are killed, injured, or fall ill as a result of their work.

Collective bargaining agreements secured

Children work because their parents do not earn enough to support the family. The IUF believes that its efforts to improve conditions for waged agricultural workers will in the long term reduce child labour. However, more immediate action is required. Currently, the IUF is working with international institutions like the ILO to eradicate the most hazardous forms of child labour in the short term. In 1999, the IUF signed an agreement with the International Tobacco Growers' Association to work together to eliminate child labour in the tobacco-growing industry. Through its training and education programmes, the IUF has enabled its affiliates to secure collective bargaining agreements which commit employers to no use of child labour.

Low levels of trade union organization

Waged agricultural workers are still poorly organized into trade unions compared to other groups of workers. This situation is due to a number of social and historical factors, not the least of which are denial/suppression of basic trade union, democratic and human rights in a number of countries. Raising the level of organization and enhancing agricultural workers' bargaining power are the challenges to which the IUF and its affiliates are responding.

Sustainable agricultural production, collective bargaining, and health, safety and environment (HSE)

Work on improving health, safety and environment standards has to be viewed in the context of promoting sustainable agriculture. Agricultural workplaces have to be sustainable both in terms of protecting the workers employed there, and in reducing any negative impact of production on public health and the general environment. This is important in winning broad public and political support for shaping and adopting a forceful ILO Convention on health and safety in agriculture.

The trade unions and their members in the sector have a vested interest in promoting their industry and ensuring its long-term profitability and sustainability. To ensure the long-term future of the agricultural industry, trade unions

wish to see collective bargaining agreements extended to cover the promotion of sustainable agriculture, including clauses on workplace health, safety and environment issues.

How trade unions organize on HSE in agriculture

Safety representatives and safety committees are the backbone of trade union organization on health and safety at work. They are the eyes and the ears of trade unions on workplace health and safety issues and play crucial roles in reducing fatalities, accidents and ill health at work. Many deal with workplace environmental issues as well. These representatives and committees help protect worker and public health, and the general environment. Safety representatives and committees are legally appointed with rights and powers under health and safety laws covering the workplace. In some countries, trade unions have won the right to nominate and appoint workplace safety representatives and committee members. In others, they have to be appointed but the employer can decide who shall carry out such functions.

Safety committees seldom legal

Safety committees are joint management-union bodies that negotiate on HSE issues in the workplace, often drawing up HSE collective bargaining agreements. Safety representatives typically investigate HSE complaints from workers, fatalities, accidents and cases of ill health.

However, few countries have legal workplace safety representatives and committees in agriculture, owing to a variety of reasons: in some cases, agriculture is simply excluded from HSE legislation; in others, the number of workers on a farm is too low for the employer to be legally required to have safety representatives and committees. There are also practical difficulties, e.g. empowering safety representatives with the right to visit farms where they themselves are not employed, as in the case of Sweden and the United Kingdom which have institutionalized roving, regional safety representative programmes to ensure that agricultural workers, and the community as a whole, receive the same HSE services as other groups of workers.

The problems agricultural workers face in improving HSE standards at the workplace and helping protect community health and the general environment

Fatalities, accidents and ill health in agriculture

Waged agricultural workers earn their living in an industry ranked as one of the three most hazardous (the other two being mining and construction). Waged agricultural workers rank high among the 1.2 million people who die annually in all industries from workplace accidents and work-related diseases, according to ILO and World Health Organization (WHO) estimates (ILO, 1996a; Helmer and Corvalán, 1999). In the United States, for example, the death rate among agricultural workers nationwide was an estimated 20.9 per 100,000 workers in 1996 compared to the average for all industries of 3.9 per 100,000 workers (Hallward et al., 1999).

The most vulnerable groups are workers in family subsistence agriculture, daily labourers in plantations, seasonal and migrant workers, women workers, and child labourers. Temporary workers are especially vulnerable. In addition, many children who are not workers die or are seriously injured on farms and plantations each year. Accident and disease reporting systems, and incentives to report them, are generally inadequate for all sectors of industry. The United Kingdom Health and Safety Executive (1997), for example, estimates that of legally reportable injuries, only 30 per cent involving employees, and 10 per cent the self-employed, are reported. In agriculture, it estimates that only 2,000 of the estimated 10,000 reportable (i.e. the most serious) non-fatal injuries each year are reported (HSC, 1999).

Furthermore, in many countries, agricultural workers are excluded from any employment injury benefit or insurance scheme, either because no such insurance scheme exists for them or because, directly or indirectly, agricultural workers are excluded from general schemes. In 1996 in the United States, for instance, farmworkers were covered by workers' compensation insurance in only eight states and specifically excluded in 24 states.

Causes of fatalities and accidents

In horticulture and forestry in the United Kingdom, where there were 675 fatal injuries

between 1986–87 and 1997–98, the most common causes of death were the following:

- being struck by a moving vehicle (18 per cent);
- being trapped by something falling or collapsing, e.g. a tree (14 per cent);
- falls from a height (15 per cent);
- contact with machinery (14 per cent);
- being struck by a moving or falling object, e.g. bales (13 per cent); and
- contact with electricity (9 per cent) – usually overhead lines.

The most common causes of non-fatal injuries in 1996/97 were as follows:

- handling, lifting or carrying (19 per cent);
- being struck by a moving object (18 per cent);
- slipping, tripping or falling on the same level (13 per cent);
- contact with machinery (10 per cent);
- being injured by an animal (8 per cent); and
- being struck by a moving vehicle (3 per cent).

Health/disease is a major problem in agriculture. Figures for the United Kingdom (HSC, 1999) read as follows:

- 80 per cent of workers suffer from some form of musculoskeletal injury (aches, sprains or strains). Workers doing repetitive tasks on crop/commodity/flower grading lines, on inspection tables, root harvesters, or processing poultry, may suffer from repetitive strain injuries (RSI). Driving tractors or other self-propelled machinery can subject the body to vibration or jolting which is associated with chronic backache or pain in the hip or knee;
- agricultural workers are affected by asthma at a rate twice the national average;
- more than 20,000 people annually are affected by zoonoses (diseases passed from animals to humans);
- 25 per cent of the workforce suffer some work-related hearing loss.

Other risks/hazards in the agricultural sector may be listed as follows:

- dusts, fibres, mists, fumes, micro-organisms, gases and vapours;
- livestock handling: risks of being bitten, butted, gored or otherwise attacked, and

transmission of diseases from animals to humans (zoonoses);

- poor hygiene – unclean drinking water, sub-standard washing and toilet facilities;
- heat and cold: high temperatures in the tropics, cold temperatures in the fields in temperate countries, working outdoors, poorly heated stores, cold stores;
- poorly designed and maintained personal protective equipment (respiratory protective equipment);
- electricity and electrocution from poorly maintained hand-held equipment, extension cables, or contact with overhead power lines. Poor electrical installations and equipment can also cause fires;
- new technologies, including computerization of many tasks which involve stress, an under-recognized problem in agriculture;
- genetically manipulated organisms (GMOs) may pose a new hazard. Workers will be planting, harvesting and processing GMO crops and handling GMO livestock. GMO products do not generally, unlike toxic chemicals, have to undergo a rigorous risk assessment and evaluation procedure. Their potential hazards remain unknown.

Exposure to pesticides and other agrochemicals constitute major occupational hazards that can result in poisoning and death and, in certain cases, work-related cancers and reproductive problems. The WHO estimates that, at a minimum, 40,000 people die annually from pesticides and a further 3 to 4 million are severely poisoned, especially in developing countries where the more toxic materials continue to be widely used and easily available (Helmer and Corvalán, 1999).

In Costa Rica, Honduras and the Philippines, 16,000 male banana workers, many of them IUF members, will never have children again. They became sterile as a result of the uncontrolled use of DBCP¹, a pesticide banned in many industrialized countries in the 1970s but which continued to be exported and used in many developing countries. In their quest for justice, these sterile workers have filed a major class action lawsuit in the United States against the banana companies and the pesticide manufacturer (World Development Movement, 1997).

A practical illustration: Health and safety problems of sisal workers in Tanzania

The Tanzanian Plantation and Agricultural Workers' Union (TPAWU), an IUF affiliate, has recorded the following HSE problems affecting its members in the Tanzanian sisal industry. In the sisal sector there are four departments – field, processing (corona), brush and press.

In the field, harvesters and welders are subject to snakebites, thorn pricks, dust, intense heat and light, rain, and a heavy workload where they lift 110 bundles of 30 leaves to earn a daily wage. Field workers also apply pesticides and fertilizers.

Processors in the corona department experience a wet splash of sisal extract resulting from the decorticating machine that produces fibre. The juice is moist and irritates the skin. Other problems include noise and the heavy weights involved in lifting the fibre to the drying line.

The brush department has a lot of fibre dust. Operators of the brush machine have a repeated exposure of the hand where incidents of losing hands have occurred. A hardened pad at the back of the hand can develop from the exposure, which presses on the knuckles. Here, too, noise is a problem.

In the press section, the loaders risk being hit and injured. A damp environment and a bright glare surround the workers in the brush section. Carrying is another heavy job for the sisal worker in this department.

Lack of labour/HSE inspection and enforcement by regulatory authorities

For most countries, labour inspection in agriculture is not a priority. Few countries have separate labour inspectors for agriculture, and coverage of this sector usually rests with the general labour inspectorate. Many countries have too few labour inspectors for the adequate discharge of their duties in all economic sectors. Where they do exist, labour inspection services in agriculture suffer from the lack of (i) financial resources; (ii) staff and their insufficient training; (iii) specialized technical advice.

Lack of applicable or enforceable international health and safety instruments

ILO Conventions, including those on health and safety, are often poorly enforced in agriculture. The IUF is supporting the shaping and hopefully the adoption of a specific Convention on health and safety in agriculture to ensure that international standards apply to this industry and that waged agricultural workers enjoy the standards protecting other workers.

IUF action

The IUF is active in all regions of the world in helping affiliates tackle HSE problems at the workplace. The organization also plays a lead role in international negotiations, lobbying and campaigning on these issues to ensure sustain-

able workplaces and sustainable agriculture around the world. Some examples follow.

Establishing agricultural safety representative programmes

The need to establish statutory, trade union nominated safety representatives and committees in agricultural workplaces is critical if the risks of deaths, accidents and ill health are to be reduced among the general public and within the environment as a whole. Special arrangements must apply to agriculture given the large number of small/medium sized farms scattered over wide geographical areas. Similarly, there is a need for safety representatives to be authorized to visit premises where they are not themselves employed, as well as a need for special financing. Various programmes have been introduced to facilitate the work of union safety representatives in agriculture (see Walters in this issue).

In Sweden, a trade union Regional Safety Representatives scheme was established in 1974 for all agricultural workplaces where no health and safety committees existed because of small numbers of workers (LO, 1998). The local trade union has a mandate to appoint the Regional Safety Representative (RSR) for a specific geographical area where there are members belonging to the union. The activity of the RSRs is an important resource for health and safety at local plant level, for both employees and employer. The RSRs have the same rights and powers as other workplace safety representatives. The only differences are determined

according to the group of employees from among whom they are appointed and the mode of financing such activities. They are basically financed by governmental support distributed through national trade unions. The Swedish Agricultural Workers Union (SLF), however, adds some 25 per cent extra financing to ensure a more effective scheme. In 1998, there were nearly 1,500 RSRs operating at 15,200 workplaces with less than 50 employees (LO, 1998).

In the *United Kingdom*, a pilot Roving Safety Representative Programme for agricultural workers has been established by the Rural Agricultural and Allied Workers (RAAW) Trade Group of the Transport and General Workers' Union (TGWU), with the support of the Government HSE (RAAW/TGWU, 1998). It was established after several years of discussion at the HSE Agricultural Industry Advisory Committee following the failure to agree on a common way forward with the employers' organization – the National Farmers' Union (NFU) – for an extension of an earlier pilot joint employer-union scheme. The RAAW/TGWU decided to launch its own programme whereby the trade union selected nine RSRs in the south of England with a view to increasing worker participation in health and safety in the agricultural industry. The programme started in 1996 with the Health and Safety Executive's backing and modest financial support from the European Commission.

Based on evaluation of the pilot project, the TGWU/RAAW believes that a national RSR programme would have a positive effect on improving health and safety on farms and significantly reducing accidents at work. There have been serious difficulties, however. Lack of NFU support has raised some problems. Another major difficulty was the inability of the RSRs to gain access to the workplaces. Under the United Kingdom legislation, the right of access is only granted to trade union-appointed safety representatives where the employer at the workplace grants formal recognition to the trade union. In many instances, the agricultural union is not recognized by the employer. These problems limited the effectiveness of the RSRs although they were able to raise the profile of health and safety in other ways.

The IUF is working to get mobile, regional safety representative programmes introduced in other countries. It considers that provisions for the right to and commitment to practical arrangements for such programmes are essential to the coverage of any ILO Convention on health and safety in agriculture.

Pesticides

IUF affiliates have continually identified pesticides as one of the most serious HSE problems. In 1998, the IUF launched a Global Pesticides Project (GPP) to reduce the use of and risks from pesticides, focusing initially on its six priority crops: bananas, cocoa, coffee, cut flowers, sugar and tea (see Amuko, p. 46 in this issue). Levels of worker exposure to pesticides in these crops are high. Pesticide applicators have the highest exposures but other workers are contaminated from spray drift and from walking through or handling sprayed vegetation. Many highly toxic pesticides are used in these crops, such as WHO 1A and IB compounds, which are generally banned or severely restricted in industrialized countries. Lack of information on hazards and prevention/control measures, lack of awareness and training, combined with the absence of technical and engineering controls (e.g., sealed mixing systems) mean that personal protective equipment (PPE) is often the first line of defence for workers, whereas in reality it should be the last. Furthermore, the PPE is often unsuitable for use in tropical conditions, often poorly maintained or changed too infrequently, and is often stored in the same area as personal clothing. These factors, combined with poor hygiene, such as lack of water in the field to treat skin and eye contamination, result in high levels of fatalities and poisonings.

Links with international lobbies

The GPP aims to build national trade union capacity and confidence to tackle these problems on the farm/plantation at national level and to address such problems by developing links with international lobbies on pesticide issues as well as with governments, farmers' organizations, and the global pesticide industry.

The GPP pilot phase involves six agricultural trade unions in Ghana, Tanzania, Uganda and Zimbabwe. The core activity is organizing and running Trade Union Education Study Circles (ESC) on pesticides, health and safety, and environment. The courses provide basic and advanced education/training for grassroots union members on farms/plantations, union officers and committee members on all aspects of union organization, recruitment and activity. The GPP now trains ESC trainers in pesticides, health and safety, and environment. They in turn teach grassroots members and trade union officers, as well as help establish new ESC groups. Strong emphasis is placed on gender issues and

on training women union members, who make up 30 per cent or more of the agricultural workforce in these countries. Training materials in local languages have been developed.

A country-driven national profile

At the national level, the Tanzanian and Ugandan trade unions are participating in a multi-stakeholder process to develop a country-driven National Profile to Assess the National Infrastructure for Management of Chemicals in their countries. Trade union participation in the process is designed to ensure that: (i) the national profile reflects the problems facing waged agricultural workers, their families and communities; and (ii) the problems highlighted by the Profile are followed by government action programmes involving unions, farmers and pesticide companies/associations. UATRE,² IUF's Argentinian agricultural affiliate, is also involved in that country's national profile, chairing a working group on exposure of rural populations to agrochemicals.

IUF affiliates are also pressing for speedy ratification by their Governments of the Rotterdam Convention on the Prior Informed Consent Procedure (PIC) for Certain Hazardous Chemicals in International Trade 1998. They are supporting an IUF campaign to expand the PIC procedure to cover all pesticides harming human health and/or the environment by systematically recording and reporting pesticide "incidents" (as per Convention criteria) to their respective governmental PIC authorities. The campaign targets "severely hazardous pesticide formulations causing health or environmental problems under conditions of use in developing countries".

The affiliates work on national capacity building and national profiles, and PIC underpins the IUF's international work in the Inter-governmental Forum on Chemical Safety (IFCS) and associated forums. IFCS is the political forum set up to oversee the implementation of Agenda 21, Chapter 19, on the Environmentally Sound Management of Toxic Chemicals. Agenda 21 is the sustainable development programme of action agreed on by Governments and stakeholders at the United Nations Conference on Environment and Development (UNCED) in 1992 (the Earth Summit).

The IUF is also working to promote alternatives to pesticides such as Integrated Pest Management (IPM) techniques. It is cooperating with the Global IPM Facility and CABI³ network to extend IPM training to waged agricultural workers.

IUF's programme of joint HSE training for agricultural workers with the global pesticide industry

The IUF has reached a voluntary agreement with the international pesticide industry, as represented by the Global Crop Protection Federation (GCPF), to carry out joint training on pesticides, health and safety, and environment for agricultural workers in different regions of the world. In January 2000, a pilot joint IUF-GCPF course was held in Uganda to develop a joint training curriculum and train a core group of union and industry trainers in its use. Joint training of workers in the sugar industry will take place in 2000. For the IUF, the framework for such cooperation is its Global Pesticides Project, and for the GCPF, its Safe Use Projects (SUPs) programme. The industry SUPs train pesticide users and allied groups who have an influence on how pesticides are used, such as medical personnel, agricultural technicians, and teachers.

Such cooperation arose out of an IUF Case Study of the GCPF's Safe Use and Handling Project in Guatemala (Hurst, 1999). This study showed that there was no training of waged agricultural workers and that the limited training on offer was too presentational in style. The case study, financed by the ILO, was presented at an ILO meeting – Voluntary Initiatives in the Chemical Industries – in February 1999.

The IUF aims to ensure that voluntary initiatives in the pesticide and agricultural industries attain the following targets: (a) fully involve workers and their trade unions; (b) raise HSE standards globally and throughout the full life cycle of products, both for workers using pesticides and producing pesticides/industrial chemicals; and (c) include trade unions as part of the verification/audit mechanisms which measure improvements in industry HSE performance.

Cut flowers and HSE

The IUF is a member of a trade union-NGO coalition that has drawn up an International Code of Conduct on Cut Flowers as a benchmark standard for this industry. Based on the Code, a Fair Trade Scheme for Flowers, including improving HSE standards, is being developed. In cooperation with the Swiss supermarket chain, Migros, a pilot scheme is underway on five Zimbabwean cut flower farms. Joint employer, horticultural association and coalition inspections of these farms have taken place so that they can be accredited under the scheme

Fields of Poison Report: California Farmworkers and Pesticides

In 1999, the United Farmworkers of America – UFWA (an IUF affiliate) carried out a study of pesticide poisonings among Californian agricultural workers, in cooperation with two public interest groups: the Pesticides Action Network North America (PANNA), and the California Rural Legal Assistance Foundation (CRLAF).

In California, the state with the largest agricultural economy in the USA, farm work is conducted by a workforce of about 600,000. From 1991 to 1996, the California Environmental Protection Agency's Department of Pesticide Regulation (DPR) reported 3,991 cases of occupational poisoning by agricultural pesticides, an average of 665 cases per year. As the report notes, the situation is even worse than these numbers indicate. Pesticide exposure incidents often go unreported because many farmworkers are afraid of incurring medical bills since few have health insurance and many do not realize they are entitled to workers' compensation. Many workers fear retaliation from employers or are not provided with sufficient pesticide hazard training to recognize symptoms of pesticide poisoning. Some farmworkers bear the symptoms they experience simply as being part of the job. Ten crops account for half of all agriculture-related pesticide illnesses (in descending order of frequency) – grapes, cotton, broccoli, oranges, ornamentals, almonds, tomatoes, lettuce, strawberries and alfalfa.

The Report's recommendations are as follows:

- rapidly phase out the use of the most toxic pesticides and promote healthy and sustainable alternatives;
- improve regulations to reduce farmworker exposure;
- strengthen enforcement of existing laws;
- improve reporting of pesticide poisonings;
- improve farmworkers' access to medical treatment; and
- ensure farmworkers' and the public's right to know.

Source: Hallward, K. et al. *Fields of Poison: California Farmworkers and Pesticides*, UFWA, CRLAF, PANNA, California, 1999 (in English and Spanish).

and their flowers sold at a premium price in Migros supermarkets. Issues to be resolved include hours of work, the provision of permanent contracts for women workers, application of legal provisions for maternity leave, provision of standardized protective clothing, training for pesticide operators, and a living wage. In cooperation with the Pesticides Trust, a member of the Pesticides Action Network (PAN), the IUF has prepared a comprehensive list of pesticides used on cut flower farms as a basis for reducing the numbers and amounts of pesticides used. The IUF is actively working with the PAN network in Africa, Europe and Latin America.

Promoting health and safety activities in the banana sector

In 1998 in Colombia, the IUF and the agricultural union, SINTRAINAGRO, organized a seminar entitled "Pesticides – impacts and alternatives". Representatives from employers, social security authorities, and the Ministry of Environment also attended, which marked an important precedent in this region. The trade union's project on promoting the health and

safety conditions of the workers in the banana sector was then proposed to and approved by the social security authorities. It has enabled the union to carry out a number of workplace investigations on pesticide use and health problems as well as publish educational and information material on health and safety issues. The seminar was followed by study circles among the union members. A cooperation agreement was also established between SINTRAINAGRO and RAPALMIRA, the Latin America branch of the PAN network, to assist the union with the technical and scientific aspects involved.

General training on HSE in agriculture

The IUF supports national/regional HSE training programmes for agricultural and allied workers. In the Caribbean region, for example, an HSE seminar in Guyana in April 1999 trained about 30 workers from the sugar cane, agriculture and tourism sectors. Some of the workers were introduced to HSE concepts for the first time, especially those coming from sugar unions. A session was held on holistic health and methods to deal with and beat non-chronic com-

municable diseases (diabetes, hypertension) and infectious diseases like HIV/AIDS – all of which are serious health threats in the Caribbean community. Another such example is the IUF's work with Brazilian trade union organizations such as CNTA, CONTAG, FENTIFUMO and CONTAC⁴ to prevent and reduce repetitive strain injuries to food workers and pesticide poisonings to agricultural workers. Workshops on organic agriculture were also held.⁴

Sustainable agriculture and HSE

The IUF situates its work on improving HSE standards within the context of promoting sustainable agriculture (IUF, 1999). At the international level, sustainable agriculture is being promoted through Agenda 21, Chapter 14, on Sustainable Agriculture and Rural Development (SARD). The UN Commission for Sustainable Development (CSD) is the body established to oversee and coordinate the implementation of Agenda 21. The CSD-8 meeting in April 2000 will review progress on achieving sustainable agriculture. At this meeting, the IUF will argue that core ILO standards, including those on agricultural HSE, must be accepted by Governments and other stakeholders as a central element of the definition and practice of SARD, and the successor concept of the Multifunctional Character of Agriculture and Land.

The IUF's work on the proposed ILO instrument on health and safety in agriculture is an integral part of the organization's wider organizing and campaigning efforts to improve HSE standards in the agricultural sector. There must be dramatic improvements in standards of protection both with regard to waged workers and farmers as well as public health and the environment before agriculture can become socially and environmentally sustainable. At the present juncture, the IUF is engaged in a twofold effort: assist in the shaping of a proposed ILO standard on health and safety in agriculture to be debated as an item on the agenda of the 88th session of the International Labour Conference (June 2000). These two exercises are complementary: linking these two complementary processes will help to make agriculture a healthier, safer, and truly sustainable industry.

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Notes

¹ DBCP: Dibromochloropropane

² UATRE: Unión Argentina de Trabajadores Rurales y Estibadores.

³ CABI: Commonwealth Agricultural Bureaux International Network.

⁴ CNTA: Confederación Nacional de Trabajadores de las Industrias de la Alimentación y Afines.

CONTAG: Confederación Nacional de Trabajadores en la Agricultura.

FENTIFUMO: Federación Nacional de los Trabajadores de las Industrias del Tabaco y Afines.

CONTAC: Confederación Nacional de Trabajadores de las Industrias de la Alimentación, Agro-industrias y Cooperativas de Beneficio de Cereales e Industrias del Medio Rural.

Trade unions must assist rural workers' organizations to represent rural workers and defend their right to freedom of association by providing their leaders with enabling education and training as well as the necessary resources to ensure their participation in development

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On 12 October 1999, the United Nations announced the birth of the planet's six billionth inhabitant. Two years earlier, the FAO (Food and Agriculture Organization) had stated that the world's economically active population was 2,827 million and that the percentage of persons working in agriculture was 49 per cent of that population. In other words, agriculture alone accounts for 1,300 million men and women. These figures afford some idea of the magnitude of the problem. In an organization such as the ILO, whose objective, lest we forget, has always been social justice as the foundation for lasting and universal peace and where for 80 years now it has been attempting to ensure that international trade does not take place at the expense of workers, these figures should be a challenge to trade unions.

The first Director-General, Albert Thomas, said that the ILO should be a vehicle for action rather than an information dispensing machine. This is why over the years the ILO's constituents – governments, workers and employers – have adopted binding international labour Conventions, inter alia, to ensure freedom of association in agriculture. From the beginning, the implementation of these Conventions has been monitored thanks to an international supervisory mechanism unique to the tripartite organization. Today, the global report on freedom of association and collective bargaining by the Director-General, Juan Somavia, to the International Labour Conference of June 2000 as part of the follow-up to the Tripartite Declaration on Fundamental Principles and Rights at Work, must demonstrate that the ILO

remains a vehicle for action, for, in his own words, "there is much that the ILO can do about social problems".

Are trade unionists making sufficient use of the international supervisory mechanism? More specifically, what of this supervision among agricultural workers, who comprise almost one-half of the world's workforce?

I. Ratifications of the Conventions on Freedom of Association in Agriculture

The evidence would suggest that far short of all agricultural workers enjoy the right to freedom of association in order to safeguard their vocational interests. Although some pressure groups have successfully voiced the concerns of some farmers in matters of globalization and trade liberalization, particularly at the Seattle Conference in December 1999 and more generally in negotiations on the "Millennium Round", most agricultural workers are protected neither by a national collective agreement nor an international Convention. These workers are not organized and live in grinding poverty that often verges on serfdom or debt bondage. Besides, they are hardly in a position to make their voices heard either at the national or the international level.

And yet in 1921, the ILO had adopted a first Convention on the right of association in agriculture, Convention No. 11, which was to guarantee all persons working in agriculture the same rights of association and coalition as workers in industry. Nevertheless, it has so far

had only 119¹ ratifications from among the 174 ILO member States.

In 1975, more than 50 years on, the International Labour Conference adopted Convention No. 141 and Recommendation No. 149 on rural workers, in an attempt to alleviate the specific problems besetting that category of workers. The Convention applies to rural workers, that is, to all persons engaged in agriculture, handicrafts or a related occupation in rural area, whether as a wage earner or as a self-employed person, such as a tenant, sharecropper or small owner-occupier.

This Convention more specifically binds its ratifying States to encourage the formation and development of rural workers' organizations and their participation in economic and social development and to eliminate all forms of discrimination as may exist against them. It also requires that steps be taken to promote the widest possible understanding of the need to develop strong and independent organizations of rural workers. It also addresses the potential contribution of these latter organizations to improved job possibilities and working and living conditions in rural areas, and to increasing and better distributing national income. To date, regrettably, a mere 37 ILO member States have ratified Convention No. 141, only five of which had not ratified Convention No. 11.²

Yet, the States that have ratified the two core Conventions on freedom of association, namely Convention No. 87 concerning Freedom of Association and Protection of the Right to Organize (1948) and Convention No. 98 on the Right to Organize and Collective Bargaining (1949), undertook to guarantee that workers, without distinction whatsoever, would have the right to establish and join unions for the defence of their interests. The protection of the core Conventions therefore extends to workers in agriculture. Likewise, rural workers should be adequately protected from anti-union discrimination on the part of employers on plantations and on large or small farms. Rural workers' organizations should also be protected against acts of interference by rural employers or employers' organizations. Lastly, rural workers should be able to negotiate collective agreements to set the terms and conditions of employment of agricultural workers.

In its 1999 report to the International Labour Conference, the Committee of Experts on the Application of Conventions and Recommendations noted with concern that for over 20 years, 52³ ILO member States had still not ratified one or the other of the two core Conven-

tions, a fact all the more disquieting as those countries account for almost one-half of the world's workers and employers.

Since then, several States have committed themselves: Cambodia has ratified the two Conventions, Cape Verde, Chile, Georgia and Malawi the first, Seychelles and Switzerland the second, thereby extending to rural workers the international protection of the right to organize and to bargain collectively. Kazakhstan has announced the forthcoming ratification of Convention No. 87. As things stand therefore, Convention No. 87 binds 127 countries and Convention No. 98, 144.

II. Supervision of application of the Conventions

1. Constitutional supervision

Although well known, it bears recalling that the very specific influence of the ILO, particularly as regards the application of the Conventions and hence those designed to protect rural workers, is due to the existence of strict mechanisms for the supervision of member States. Indeed, ratification of a Convention is a free act by a State, but once this commitment has been made, the Conventions acquire a force that is binding and independent of the mere will of States and must be applied. Trade unions therefore have a means of ensuring implementation of the Conventions. Some of these mechanisms are enshrined in the ILO Constitution, as follows:

- Complaints can be lodged in virtue of Article 26 by one State against another, if the one or the other has ratified a given Convention, by a government, worker or employer delegate to the International Labour Conference or at the initiative of the Governing Body.
- Complaints may be filed under Article 24 by a workers' or employers' organization.
- Comments may be submitted to the Committee of Experts pursuant to Article 23.2 by workers' or employers' organizations, which must receive a copy of the government report on the application of the Conventions ratified. Once these copies have been received, these organizations are entitled to comment on their content and on the observance of the Convention in practice.

The list of constitutional supervisory mechanisms would not be complete without mention

of the role of the Committee of Experts, comprising independent persons and responsible since 1927 for examining the reports to be submitted by member States on the Conventions they have ratified under Article 22. This Committee makes comments, which are set out in a report, when it observes deviations or progress in the application of Conventions. Each year, the reports of the Committee of Experts are the subject of an extensive public discussion within the tripartite committee of the International Labour Conference in which worker and employer representatives can state their positions to the governments against which the complaints are made.

Lastly, under Article 19, the ILO Governing Body periodically requests reports from States that have not ratified certain Conventions and from all States that have done so. These reports are subject to general surveys conducted by the Committee of Experts which, apart from the progress and problems encountered in the application of ratified Conventions, reviews the stumbling blocks to the ratification of those Conventions that have not been ratified and the prospects for ratification. The Conference also discusses these studies.

2. Special machinery

In the early 1950s, special machinery to examine complaints of violation of the freedom of association was created in agreement with the United Nations. Indeed, the Governing Body's Committee on Freedom of Association – of tripartite composition – also examines complaints filed by international or national workers' or employers' organizations, and this even in cases where the government in question has not ratified the Conventions on freedom of association. The measures recommended by the Committee, which are approved by the Governing Body, are transmitted to the government concerned so that it may endeavour to correct the situations that are in breach of freedom of association.

Complaints against States that have not ratified the freedom of association Conventions and which are sometimes not even members of the ILO, though members of the United Nations, may be submitted to a fact-finding and conciliation commission on freedom of association comprised of independent persons, with the consent of the State against which the complaint has been lodged.

Through this supervisory machinery, the ILO aspires toward better recognition of the rights and freedoms of agricultural workers

enshrined in the Conventions on freedom of association. It endeavours to halt violations of and remove obstacles to the enforcement of freedom of association in cases brought to its attention.

III. Findings of the supervisory bodies in supervisory procedures

The preceding examples show that the ILO supervisory bodies have made some headway, especially through dialogue and moral suasion. They also bear out serious infringements of the obligations arising from the freedom of association Conventions with regard to rural workers, by countries that do not observe the ILO principles in that domain.

1. Complaints under Article 26 of the Constitution

In the 1980s, worker delegates to the International Labour Conference filed complaints of non-observance of the freedom of association Conventions against Poland on the one hand, and against the Dominican Republic and Haiti on the other and, these States being ILO Members that have all ratified Conventions Nos. 87 and 98, commissions of enquiry were set up to examine the matters raised. The commissions set out their recommendations concerning the governments in question.

A few years after the commission of enquiry on Poland had examined the complaint about the suspension, by the decree on the State of War dated 12 December 1981, of the entire independent trade union movement's right of association and protest, that country re-registered not only the independent *Solidarity* trade union, which had spearheaded the struggle to institute genuine freedom of association in the countries of Eastern Europe, but also *Rural Solidarity*. Like the first, this latter union had been registered as a result of pressure from workers in May 1980 while the ILO Director-General, Mr. Blanchard, was present in Warsaw at the head of the direct contacts mission that was looking into the complaints lodged with the Committee on Freedom of Association. These unions had then been banned on 12 December 1981 and their rights and privileges were restored in 1989.

After the work of the commission of enquiry on the Dominican Republic, that country in 1993 strengthened its legislation for the protection of worker representatives and trade union delegates against anti-trade union retaliation. It also stepped up monitoring by the Labour

Inspector on sugarcane plantations and *batays* where Haitians worked as cane-cutters under infra-human conditions. Since then, the Dominican Republic and Haiti have concluded agreements on the living and working conditions of Haitians in the Dominican Republic.

2. Complaints under Article 24

Also in the 1980s, a complaint was lodged by the Trade Union Confederation of Norway alleging non-observance of Conventions Nos. 11 and 98 by Turkey. Following a military *coup d'état*, 53 leaders from the Federation of Progressive Trade Unions of Turkey (DISK) had been arrested and were faced with the death sentence. The DISK and its affiliate unions had all been suspended by decree. There had been large-scale dismissals. All sectors of the economy had been affected, including the agricultural sector.

The Governing Body had submitted the matter to the Committee on Freedom of Association. On the Committee's recommendation, direct contact missions were sent to Turkey to meet with the Government, trade unionists and employers. The Committee on Freedom of Association examined this and the other related complaints some 20 times.

The Committee noted that the death sentences had not been passed, the trade union leaders had been freed after three and a half years of detention and that the rights and assets of the DISK and its affiliates had been restored. Agricultural workers won the right to negotiate their working conditions collectively without having to meet the twofold criteria imposed on other workers, that is, having to account for 10 per cent of the workers in the industry at the national level and 50 per cent of workers in a bargaining unit. Only the 50 per cent criterion applies to agricultural workers.

3. Comments under Article 23.2

A growing number of comments are being addressed by workers' organizations to the Committee of Experts on the Application of the Conventions on Freedom of Association for Rural Workers.

Accordingly, in Bangladesh, India, Malaysia, Pakistan and Sri Lanka, national trade union organizations have denounced the fact that rural workers outside of plantations are not protected by the law on industrial relations.

In Morocco, some trade union organizations have levelled criticism at the trade union law, which does not provide strong enough guar-

antees to ensure enforcement of freedom of association and protect the establishment of trade union bureaux in rural areas.

In New Zealand, a national trade union organization has stated that the new law has had the effect of reducing unionization in agriculture. It claims that at least one-half of collective agreements are negotiated in the absence of trade unions, that is, directly with the agricultural workers.

Some countries have reported that they had set up commissions to look into the matters raised or that they were in the process of preparing draft laws to correct those situations.

4. Comments by the Committee of Experts on the reports to be submitted by governments pursuant to Article 22 of the Constitution

In the framework of regular monitoring of the application of the Conventions on freedom of association, the Committee of Experts has noted with satisfaction that its comments have elicited some legislative improvements, particularly as regards the application of Conventions Nos. 11 and 87.

In *Guatemala*, a 1961 decree amending the Labour Code of 1947 revoked provisions that had drastically restricted the freedom of association of agricultural workers. Those provisions had stipulated a minimum of 50 agricultural workers for a union to be formed, while 20 sufficed for other unions. They confined agricultural trade unions to the creation of cooperatives, the management of occupational benefit plans and training in literacy for those unable to read and write. Besides, they had made the Ministry of Labour responsible for ensuring that agricultural trade unions did not engage in any other activities so long as they were unable to prove that they had fulfilled the functions in question and to show that 60 per cent of their members could in fact read and write.

In *Nicaragua*, a 1951 law prevented agricultural workers from setting up company unions (the only ones that they could in fact lawfully establish) if more than 60 per cent could neither read nor write. In addition, that law required a minimum of 25 permanent members for a company union to be created, the main practical consequence of which was preventing seasonal workers from setting up unions. That law was repealed in 1966.

In *Peru*, the 1964 law on agrarian reform abolished contracts that linked the right to use land to the provision of services, even when the par-

ties concerned were being remunerated in kind. This had the effect of extending labour legislation to persons providing services and of abolishing the *arrendires* (sharecroppers) and *allegados* (subtenants performing certain services) systems, those categories of workers having been hitherto deprived of the right of association.

In *Brazil*, legal provisions enacted in 1962 limiting the scope of action of rural trade unions to the commune were repealed in 1967.

In *Chile* also, in 1967, after 20 years of arduous talks between the Committee of Experts and the Government, the 1947 law was finally amended. It had contained provisions restricting rural workers' right to organize by comparison with that of industrial workers. The law in question allowed them to set up trade unions only on the same agricultural estate and required that founding members must have at least one year of uninterrupted service on that estate and represent at least 40 per cent of the workers. As a result, seasonal agricultural workers were denied the right to organize. It had furthermore imposed stricter rules concerning the management of funds and prohibited agricultural workers from putting forward claims during the sowing and harvesting seasons – two 60-day periods in each year – allowing them to submit claims only once per year.

A direct contacts mission between representatives of the Director-General of the ILO and the Government of *Venezuela* in 1976 led to the repeal of the provisions of the Labour Regulations Governing Agriculture and Livestock prescribing that labour inspectors supervise the election of agricultural trade union leaders. The law has now instituted protection against dismissal for agricultural workers when they formally notify their interest in setting up a union. The requirement that agricultural workers must live within the confines of a given labour inspection jurisdiction so as to be able to set up a union and restrictions on the right to strike has been eliminated.

In *Ethiopia*, the 1975 proclamation accorded the right to organize to agricultural workers, including those engaged in the traditional sector, on an equal footing with other workers.

In *Lesotho*, the labour code that was drawn up with ILO technical assistance in 1992 expressly extended the right of association to workers and employers in all sectors of the economy, including agriculture.

Also in 1992 in the *Dominican Republic*, the new labour code that was drawn up thanks to cooperation between the Government and the ILO initiated with the setting up of the afore-

mentioned Committee of Experts, was extended to cover all workers in agricultural, agro-industrial, livestock and forestry enterprises, whereas agricultural enterprises with less than ten workers had hitherto been excluded.

In 1995 in *Panama*, amendments to the Labour Code repealed the rule that 75 per cent of the members of a trade union had to be of Panamanian nationality and reduced from 50 to 40 the minimum number of workers required to set up a union, and this has given a boost to the right of migrant agricultural workers to organize.

In 1999, *Nepal* amended the law on trade unions to extend its application to self-employed workers and agricultural workers.

In the broader context of the application of Convention No. 87, the Committee of Experts has addressed the right of members of agricultural cooperatives in communist countries to organize, particularly of workers on the *Kolkhozy* (collective farms) which in countries such as the former *USSR* represented 80 per cent of agricultural workers. Cases in point were *Albania*, the former Soviet Socialist Republic of *Byelorussia*, *Poland*, the former Soviet Socialist Republic of the *Ukraine*, the former *USSR* and *Romania*, which had ratified Conventions Nos. 11 and 87.

By way of example, the Government of the former *USSR* had made some progress in 1981. With the adoption in August 1997 of a decision by the Central Trade Union Council on how to apply the Regulations on Factory Trade Union Committees to *kolkhoz* trade union committees and to the fishing *kolkhozy*, an agreement was reached between the Ministry of Agriculture and the central *kolkhoznik* council. That agreement has vested the *kolkhoz* trade union committees with the right to represent *kolkhozniks* as well as workers and employees of the *kolkhozy*. A similar situation had prevailed in the former Soviet Socialist Republics of *Byelorussia* and the *Ukraine*. It was only after the fall of the Berlin Wall in 1991 and the ensuing upheavals, however, that workers in those countries, including agricultural workers, gained the right to set up independent trade unions outside the trade union structure that was pledged to the communist party.

In parallel with these major legislative advances and despite the requests it has been making, for decades now in some instances, the Committee of Experts, regrettably, must note with concern that a good many governments are dragging their feet when it comes to aligning their laws with the Conventions on freedom of association for rural workers.

Since 1969 for instance, the Committee of Experts has been requesting *Rwanda* to extend the provisions of the Labour Code to agricultural workers, a promise that country has been making for 30 years now.

Bolivia's Labour Code excludes agricultural work and instead subjects it to special provisions. The Government has reported that the law creating the National Agrarian Reform Institute has brought rural wage earners within the scope of the Labour Code. It also gave the assurance in 1999 that the exclusion of agricultural work is to be ended.

Honduras continues to exclude from the general labour law those agricultural estates with less than 20 permanent employees, with the result that agricultural workers on such estates are denied freedom of association, the right to strike, to bargain collectively and protection from anti-trade union discrimination.

In *Swaziland*, the 1996 labour law still excludes enterprises with less than ten employees engaged in land clearance, logging and agriculture. With ILO assistance, however, that country has elaborated a draft law that will eliminate that provision.

Paraguay still requires 300 workers for the establishment of an industrial union, which in practice considerably impairs the formation of agricultural trade unions.

In some provinces of *Canada* such as Alberta, New Brunswick or Ontario, agricultural and horticultural workers, or both at the same time, fall outside the purview of laws on industrial relations, which means that they are also denied protection under those laws with respect to the right to organize and to bargain collectively.

Pursuant to the 1958 Agricultural Labour Code, strike action is still forbidden in the *Syrian Arab Republic* on pain of imprisonment. Strikes are also prohibited during the harvest months in Guatemala.

Since 1980, *Liberia* has outlawed strike action by all workers throughout its territory, including of course agricultural workers on plantations. The latter workers are also forbidden to join industrial workers' organizations.

In *Costa Rica*, a provision of the Labour Code prohibits strike action in the livestock and forestry sectors. Nevertheless, in January 1998 that country's Supreme Court ruled that provision as unconstitutional. To eliminate all ambiguity in the matter, the Committee of Experts is still requesting the Government to expressly repeal the provision. It has also been requesting that Government for many years now to bring agricultural or livestock enterprises with less

than five permanent employees within the scope of the Labour Code and to take steps to guarantee access for trade union leaders to plantations.

The Committee is requesting the Government of *Burundi* to revoke a 1967 Decree-Law on rural associations making it mandatory for farmers to join and pay dues to these associations, setting their statutes, requiring them to render certain services to the enterprise, supply products from harvests and livestock and to observe rules of discipline with regard to crops, or risk seizure of their goods.

In *Afghanistan*, the Committee is urging the Government to amend the provision of the Labour Code that empowers the single trade union to impose on workers, including agricultural workers, penalties with respect to work discipline and compliance with production plans.

In *India*, it is requesting that labour inspection be stepped up for forestry and brickyard workers in workplaces scattered across vast areas. It is also insisting that the 1948 trade union law should be extended to cover the musters assistants, these being workers responsible for providing building sites with water and medical services.

For many years now the Committee has been underlining the fact that forestry workers in *Pakistan* are not covered by the law on industrial relations and are thus denied the right to organize.

In the *Philippines*, owing to the large number of islands comprising the archipelago and the distance of rural workers from one another, the Committee is requesting the Government to remove the obstacles to the right of agricultural workers to freely elect their representatives, without obliging them, as is presently the case, to create local sections and to hold direct elections by secret ballot, or face dissolution.

5. Reports under Article 19

When the General Survey was conducted on Convention No. 141 of 1983, the Committee of Experts had found that 23 States, half of them being developing countries, had ratified it.

Some governments had reported the following problems that were either retarding or preventing ratification:

- Australia, Bangladesh, Cameroon, Canada, Ireland, Japan, Madagascar, New Zealand, Uruguay and the United States spoke of legislative problems, some adducing drawbacks associated with their internal constitutional structure.

- Other governments such as Burundi, Upper Volta – now Burkina Faso – Pakistan and Rwanda had mentioned the economic and social context, which they deemed unfavourable to the development of rural workers' organizations.
- Still others such as Barbados, Kuwait and Singapore had indicated that the agricultural sector played no role in their economy.
- Indonesia, Qatar and Turkey stated without beating around the bush that they did not envisage ratification in the near future.
- Countries such as Argentina, Colombia, Gabon, Liberia and Morocco stated that there were no particular obstacles to ratifying the Convention, yet they have still not done so.

In contrast, since 1983, Brazil, Burkina Faso, Costa Rica, El Salvador, France, Greece, Guatemala, Guyana, Hungary, Mali, Malta, Poland, Uruguay and Venezuela have ratified Convention No. 141.

6. Committee on Freedom of Association

With respect to rural workers, the numerous complaints of violation of freedom of association examined by the Committee often relate to serious and even tragic infringements of human rights. There are allegations of murder, violent deaths of agricultural trade union militants or leaders and disappearances or kidnappings of trade unionists. There are also reports of mass arrests of striking agricultural workers, evictions from land, or even of occupation of the premises of rural workers' unions.

The Committee is requesting the governments concerned to initiate independent judicial inquiries so as to clear up the allegations and punish offenders. In many cases, paramilitaries, hired killers, sometimes even army and police officers guilty of grave offences have received severe penalties in the wake of the Committee's recommendations.

Other complaints include refusal to register agricultural unions, dissolution by administrative means or the denial of access to plantations for trade union leaders. There are also complaints regarding the creation of the so-called "solidarist" organizations, by and under the influence of employers, for the purpose of managing social amenities in agricultural enterprises and in other sectors. The effect of these "solidarist" organizations is to weaken the position of trade union organizations in the

agricultural sector, with its already low level of unionization and where labour inspection visits are rare as farms are geographically widely scattered. After a direct contacts mission in 1993, legal provisions were adopted in Costa Rica to ensure that the right to bargain collectively would be reserved for trade unions to the exclusion of the "solidarist" associations.

It is clear, then, that respect for public freedoms and the right to organize is still far from being the norm in too many countries, but that appreciable headway has been made in the framework of complaints procedures initiated with the Committee on Freedom of Association, itself a quasi-judicial body that now enjoys unquestionable prestige.

7. Complaint examined by a Fact-finding and Conciliation Commission on Freedom of Association

This particular procedure was applied to South Africa under apartheid at a time when that country had no longer been a Member of the ILO since 1966, though it had remained a Member of the United Nations. Hence, when in 1988, and pursuant to the procedure in force, a national trade union organization filed a complaint against that country of violation of freedom of association, the Secretary-General of the United Nations submitted the matter to the ILO for examination. South Africa, then in the throes of profound political upheaval, gave its consent to the ILO Governing Body for the establishment of a fact-finding and conciliation commission.

The commission visited the country to look into matters of fact and of law together with representatives of the Government, the complainants and of employers. In the wake of the recommendations made by that commission in 1992 and the abolition of apartheid, rural workers obtained the right to organize when South Africa brought them within the scope of the law on industrial relations in 1995. In parallel, it also resumed ILO membership in 1994 and ratified Conventions Nos. 87 and 98 in 1996.

IV. Looking ahead

In summing up, even though much remains to be done, some successes have been scored thanks to the ILO. With its experience of over 80 years in this domain, this international organization provides trade unions with means by which to implement their policies.

At the national level, they are able to use traditional means to exert pressure on national parliaments – the public arena in each of the 174 State Members of the ILO – by launching campaigns designed to help rural workers by securing ratification of Conventions Nos. 87 and 98 on freedom of association and, of course, of Conventions Nos. 11 and 141, which deal more specifically with the right of workers in agriculture to organize.

They can make extensive use of that trade union weapon par excellence, worker solidarity, so as to help agricultural workers set up strong and independent rural worker organizations. To achieve this, trade unions must undertake a veritable pedagogical mission in which they must help train agricultural workers in setting up unions, freely choosing their representatives and above all in collective bargaining with employers and government on the terms and conditions of employment.

Like governments, and on the basis of Recommendation No. 149 detailing the role to be played by rural worker organizations, i.e. to represent and defend the interests of these workers and ensure their participation in development, trade unions must themselves also help these organizations to participate in planning procedures and in the functioning of institutions concerned with the development of rural areas. In short, they must help them provide education and training for rural workers and leaders of their organizations, including financial or material assistance for their establishment and proper running. It is hard to overemphasize the importance of education and training in the development of rural workers' organizations in enabling them rapidly to assume their responsibilities in economic development.⁴

Moreover, thanks to the technical assistance resources available to the ILO, it could also create a veritable school of collective bargaining, at the International Training Centre of the ILO in Turin for instance, to train workers and employers in the drafting of agreements and accords on working conditions.

Trade unions may, and they are strongly urged to do so, avail themselves of the supervisory machinery created by the ILO to submit comments or even complaints to the Committee of Experts, the Committee on Freedom of Association, the commissions of inquiry or the fact-finding and conciliation committees on freedom of association in order to secure implementation by the States concerned of the fundamental principles of freedom of association

and collective bargaining. If those unions can utilize this international supervisory machinery, they have a duty to rural workers to do so in virtue of the worker solidarity mentioned above. All too often, rural workers make up an extremely vulnerable segment of the population, despite being the ones responsible for feeding that population.

Notes

¹ The ILO member States that have to date still not ratified Convention No. 11 are: Afghanistan, Angola, Armenia, Bahrain, Bolivia, Botswana, Cambodia, Canada, Cape Verde, Dominican Republic, El Salvador, Guinea, Eritrea, the Gambia, Georgia, Guinea-Bissau, Haiti, Honduras, Hungary, Indonesia, Iran, Israel, Japan, Jordan, Kazakhstan, Korea (Republic of), Kuwait, Lao PDR, Lebanon, Liberia, the Libyan Arab Jamahiriya, Republic of Moldova, Mongolia, Namibia, Nepal, Oman, the Philippines, Qatar, Saint Kitts and Nevis, San Marino, Sao Tome and Principe, Saudi Arabia, Sierra Leone, Somalia, South Africa (which nevertheless ratified Conventions Nos. 87 and 98 in 1996), Sudan, Thailand, Trinidad and Tobago, Turkmenistan, the United Arab Emirates, the United States, Uzbekistan, Viet Nam, Yemen and Zimbabwe.

² The five countries are Afghanistan, El Salvador, Hungary, Israel and the Philippines.

³ For Convention No. 87, this applies to 36 countries. Members of the ILO for over 20 years now, namely Afghanistan, Angola, the Bahamas, Bahrain, Brazil, Cambodia, China, Democratic Republic of the Congo, El Salvador, Fiji, Guinea-Bissau, India, Iran, Iraq, Jordan, Kenya, Malawi, Mauritius, Morocco, Nepal, New Zealand, Papua-New Guinea, Qatar, Saudi Arabia, Singapore, Somalia, Sudan, Thailand, Uganda, United Arab Emirates, United Republic of Tanzania and the United States; for Convention No. 98, 24 member countries, namely Afghanistan, Bahrain, Cambodia, Canada, China, Congo, El Salvador, Equatorial Guinea, India, Iran, Kuwait, Lao PDR, Mauritania, Mexico, Myanmar, New Zealand, Qatar, Saudi Arabia, Seychelles, Somalia, Switzerland, Thailand, United Arab Emirates and the United States.

⁴ Articles 16 and 17 of Part III of Recommendation No. 149 on ways of promoting the development of rural workers' organizations concerning education and training (Section C) provide as follows:

"16. In order to ensure a sound growth of rural workers' organizations and the rapid assumption of their full role in economic and social development, steps should be taken, by the competent authority among others, to (a) impart to the leaders and members of rural workers' organizations knowledge of:

(i) national laws and regulations and international standards on questions of direct concern to the activity of the organizations, in particular the right of association;

(ii) the basic principles of the establishment and operation of organizations of rural workers;

(iii) questions regarding rural development as part of the economic and social development of the country, including agricultural and handicraft production, storing, processing, transport, marketing and trade;

(iv) principles and techniques of national planning at different levels;

(v) training manuals and programmes which are published or established by the United Nations, the International

Labour Organization or other specialized agencies and which are designed for the education and training of rural workers;

(b) improve and foster the education of rural workers in general, technical, economic and social fields, so as to make them better able both to develop their organizations and understand their rights and to participate actively in rural development; particular attention should be paid to the training of wholly or partly illiterate workers through literacy programmes linked with the practical expansion of their activities;

(c) promote programmes directed to the role which women can and should play in the rural community, integrated in general programmes of education and training to which women and men should have equal opportunities of access;

(d) provide training designed particularly for educators of rural workers, to enable them, for example, to help in the

development of cooperative and other appropriate forms of servicing activities which would enable organizations to respond directly to membership needs while fostering their independence through economic self-reliance;

(e) give support to programmes for the promotion of rural youth in general.

17. (1) As an effective means of providing the training and education referred to in Paragraph 16, programmes of workers' education or adult education, specially adapted to national and local conditions and to the social, economic and cultural needs of the various categories of rural workers, including the special needs of women and young persons, should be formulated and applied.

(2) In view of their special knowledge and experience in these fields, trade union movements and existing organizations which represent rural workers might be closely associated with the formulation and carrying out of such programmes."

Occupational safety and health for women workers in agriculture: Public health issues in the agricultural sector call for specific technical inputs and for addressing the issues of deprivation and imbalances of power

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Women are half the world's population, receive one-tenth of the world's income, account for two-thirds of the world's working hours and own only one-hundredth of the world's property.
International Labour Organization

Agriculture is a significant means of employment and livelihood in Africa, Asia and Latin America. It is often a major contributor to the measured Gross Domestic Product in southern hemisphere countries, and provides raw materials for industrial processing, particularly in Africa. Despite this, workers and their families on large-scale farms and peasant communities remain disadvantaged in terms of access to infrastructures, markets, social services, social security, labour protection, investment institutions and other critical economic inputs for their development. It is generally within rural areas, particularly in Africa, that one finds the "poorest of the poor". Landless peasants and workers on large-scale farms are "workers" as long as they have jobs, and become "squatters" as soon as they lose them. Such marginalization has undermined the accurate collection and presentation of information of social conditions in the agricultural sector.

In many southern hemisphere countries, agriculture is dual in nature, with smallholder peasant production and large-scale estates, often with underlying conflict over the land apportionment between these sectors. In many southern African countries, for example, the best agricultural land was appropriated for use by white settlers and/or multinational companies, confining the local black population to generally poor agricultural areas. This led to persistent divisions between the sectors in

terms of land tenure systems, forms of labour employed, and access to markets and investment (Ferguson, 1990; Loewenson, 1992a; Rutherford, 1997). Despite their greater marginalization, however, subsistence small-scale farming has always been linked with the formal economy, initially through subsidizing the family costs of migrant labour to urban and mining areas, and later through formal sector wage remittances sent back to support households living below poverty levels (Palmer and Parsons, 1977; First, 1980; Vail, 1989). These links have crossed national boundaries, for example through the recruitment of migrant labour from rural areas of Malawi, Mozambique, Lesotho and Botswana for the mining sector in South Africa.

This article gives specific focus to the issue of women agricultural and plantation workers in developing countries, and their health and safety problems. It seeks to explore the production and employment patterns in agriculture; their impact on the health of women workers in the sector; and their implications in terms of better protection of women workers' health in agriculture.

Women's employment and health are placed first in the context of the more general trends in the sector. As the paper details below, women often occupy the most insecure farm jobs, have least secure rights to smallholder land ownership and participate least in formal

socio-political structures. Such marginalization means that their situation, poorly documented as it is, receives little public or formal attention. Ad hoc surveys by the author and others thus provide much of the information on the situation of women used in the paper, much of it drawn from the author's own continent, Africa. While it is not intended to extrapolate African experiences to other regions, the paper aims to raise issues that may have wider application.

Production and employment trends in agriculture and their impact on women's work

The past 30 years have shown evidence of a trend towards increasing mechanization and chemical inputs in large-scale agriculture (Loewenson, 1992a; McIvor, 1995). For a number of decades, this was also accompanied by a bias against small-scale farming, a highly unequal distribution of land, and a policy environment favouring large-scale farms. Small-scale farmers have also been encouraged to increase chemicals and equipment use to enhance productivity, including through the promotion of hybrid seed varieties, credit and marketing schemes (Porter and Phillips-Howard, 1997), and outgrower arrangements with formal sector estates (Hinderink and Sterkenburg, 1987). Associated with the trends towards capital intensity and the declining terms of trade in farming, is a trend towards substituting permanent workers with non-permanent, seasonal workers (McIvor, 1995). While increasing flexibility in labour markets is found across most sectors, the poor application of basic labour standards combined with the absence of benefits in the agricultural sector have led to a more pronounced shift towards insecure forms of employment.

The proportion of labour in agriculture is often substantial. In southern African countries, for example, it ranges from 40 per cent in South Africa to 88 per cent in Malawi. In all these countries the proportion has declined over the last 30 years (Eicher and Rukuni, 1994). Working conditions for farm workers are generally worse than in other formal sectors of the economy (Devereux and Nøraa, 1996; Davies, 1990; du Toit, 1996). Further, within the formal agricultural sector, the conditions and terms of work differ dramatically in terms of permanent or non-permanent workers, the former not only having improved job security but also typically higher wages, better housing, and health and work benefits (Loewenson, 1992a).

Given that non-permanent workers have less rights, generally less pay, and no security compared to permanent workers, this trend towards casual employment is a distinctly negative employment trend. For example, the recent trend towards improved labour standards in the formal agricultural sector noted later in the paper is undermined by the fact that these rights are often only practically enforceable in the case of permanent workers.

The greater share of labour on farms is, however, found in the informal or small-scale sector. In southern Africa, this makes up about 68 per cent of the total labour force, for example (Loewenson, 1998). Much of the employment in the small-scale agricultural sector is unpaid family labour, although there are also people engaged as workers who receive direct pay for their labour.

While informal sector employment is poorly monitored, studies have found a range of full-time and part-time casual forms of labour, often hired for specific tasks, paid in cash or kind, such as food and clothing (Pankhurst, 1991; Worby, 1995; Marshall and Roesch, 1993). Household labour on small-scale farms can thus be complemented by a range of family and non-family labour, in various forms of contract, and paid in various forms. The common feature is the largely unregulated nature of the sector, and the absence of industrial relations mechanisms for regulating and monitoring work practices in the sector.

Within this general context, women occupy a large share of jobs in both large and small-scale farming. Female labour participation rates are generally lower than male. In agriculture, and particularly in household, small-scale, and low-skill forms of large-scale agriculture, the female participation rate rises markedly, making these the traditional spheres of female employment.

No control over outputs, land, capital inputs

Two factors exercise a negative impact on this positive level of labour participation: in the formal sector, women occupy the lowest quality, least secure jobs; in the informal sector they often lack control over the outputs they produce, or over the land and other capital inputs to production, particularly in patriarchal societies. Women are therefore the most vulnerable group in both sectors. In the formal sector, women particularly occupy non-permanent jobs (Kamuzora, 1986; Tibone, 1989; Davies,

1990; Gitonga, 1991; Loewenson, 1991, 1992a; FAO 1992; de Vletter, 1995; Rutherford, 1996). As non-permanent workers, they can be dismissed at will, receive no benefits and often lower pay (Adams, 1991; Amanor-Wilks, 1997; Loewenson, 1991). In much of the African small-scale farming sector, women have few primary rights to land in case of a breakup of a family or widowhood. They face discriminatory inheritance practices, while land reform programmes typically give sole title to husbands. Women have poor control over their production output: in Zimbabwe, for example, while women account for 80 per cent of the labour for all household and farm tasks and produce up to 70 per cent of food crops (Johal et al., 1993), once a crop becomes lucrative to grow for the market, control often shifts to men. Hence small stock are maintained by women while cattle (having greater capital and market value) are owned and controlled by men. As production for external markets has increased, so too has the control of these crops often shifted to men. While matriarchal systems may provide for greater female control in some of these areas, weak female participation at the decision-making level of formal investment and technical agricultural institutions may lead to poor support of small-scale farming done by women. Not surprisingly, therefore, women have been reported to work in undercapitalized and insecure production activities with inadequate access to credit, land, marketing and extension services, training and other inputs (Johal et al., 1993).

Dual burden places most severe stress on poor women

In general, women have been found to work on average one to three times longer than men in the same society, whatever the number of hours men put in (Smyre, 1992). A ready explanation is the double workload: the dual burden of household work and work in other productive spheres is common north and south, but perhaps places the most severe stress on poor women, whose social support is weakest. Much of poor women's time is spent in meeting basic needs, such as fetching water and firewood, preparation of food, and in caring for dependents (ZWB, 1994). In Zimbabwe, for example, collecting water accounts for 20 per cent of women's time and collecting fuel 10 per cent (Johal et al., 1993). Women also spend a considerable amount of time informally trading surplus produce. This domestic and social

work is generally not valued as part of the domestic product, and thus assumes an invisible status and commands little investment in improved conditions.

One consequence of this dual workload is that women often take children they are minding with them into fields, exposing the children as well as themselves to occupational hazards (Gitonga, 1991; Loewenson, 1992b). Use of piecework practices on formal sector estates has encouraged the use of non-paid family and child labour, increasing the pressures on children to take up adult roles (London, 1997; Loewenson, 1997a).

There are thus a number of features in the current situation and the recent trends in production and employment that are likely to influence women's health in agriculture as follows:

- i. inequality in ownership of land, in access to credit and other infrastructures in rural areas associated with inequalities in incomes and social well-being;
- ii. the low level of investment, productivity and poor profit margins in many small-scale agricultural enterprises, associated with rural poverty;
- iii. trends towards increased insecurity of employment, low-quality jobs and piece wage jobs, particularly for women workers;
- iv. low control in female small-scale farmers over land, and over decision-making in and outputs from production; and
- v. the dual burden of household work and farming work, with long working hours and double workloads.

Occupational and public health problems in relation to women's work in agriculture

While the conditions of employment and hazards of agricultural work are often poorly monitored, there is increasing evidence that agricultural workers face significant occupational and public health problems. The ILO recently reported that at least 170,000 agricultural workers die each year and millions more of the world's 1.3 billion agricultural workers suffer serious injuries or occupational diseases. Whereas occupational mortality rates have declined over the 1990s in other dangerous occupations, such as mining and construction, those in agriculture have continued to rise (ILO, 1997). Workers in developing countries are

especially at risk given inadequate education, training and safety systems. Women's work has been poorly monitored for its health risks due to its informal or non-permanent nature, even though women have been noted to do hazardous work (London, 1997).

Hazards/risks in the work environment

Agricultural work carries with it a number of risks, as follows:

Physical hazards: Heat, dust, vibration from farm tools and vehicles, and electrical hazards from contact between irrigation pipes and overhead lines

Mechanical hazards: From cutting tools and farm machinery

Chemical hazards: Particularly pesticides and agrochemicals

Biological hazards: From moulds in organic dusts to farm animals

Ergonomic hazards: Bending, long hours of standing

Work organization hazards: Deriving from piece-work practices and poor welfare facilities

Complex causes

These risks are amplified by the large numbers of exposed workers and exacerbated by a lack of controls in the work environment and poor provision of protective clothing. Beyond those workers directly exposed, many other workers and family members are exposed indirectly through early entry into fields, packing of products, pruning of crops and through use of contaminated water supplies or air pollution (London, 1994). This is particularly the case as workers and their families live and work on the farms, sometimes in close proximity to the fields. Risks are also amplified by the poor control that workers have over the pace, content and organization of their work. Formal sector agriculture is characterized by the least developed labour relations systems, as well as weak bipartite systems for risk identification and management. In addition, workers are unwilling to take individual action to refuse dangerous work, particularly if they think that such action threatens both their job and housing security when they live and work on the farms. Adverse socio-economic conditions (low wages, migrant labour, physical violence, alcohol abuse) and the stress induced by income and job insecurity add to the immediate hazards (Myers, 1990).

Narrow margins for investment in health and safety

Small-scale farmers face a similar range of hazards, with lower levels of technology and high labour demands for relatively low outputs. This makes the margins for investment in health and safety relatively narrow. Increasing capital and technological inputs to production in recent years have increased exposure to agrochemicals. However, the latter are often applied manually, using old, poorly maintained equipment, with inadequate information to users concerning the risks involved. Exposure to agrochemicals has been reported to pose the most sharply increasing health risk in agricultural work (ILO, 1997). Globally, pesticides sales have risen by 5.5 per cent per year, with forecasts of further increases by 1.6 per cent per annum over the next five years (Rother and London, 1998). In developing countries, pesticide risks include the use of toxic chemicals, restricted or banned in other countries, unsafe and poorly maintained application techniques, lack of information on the product for the user, unsafe storage of chemicals and use of old chemical containers for food and water storage. Controls for pesticide exposure have been found to be inadequate in case of the toxicity of the pesticide, and dissemination of information about the pesticides very poor (Loewenson, 1993; Loewenson and Nhachi, 1996; London, 1994; Lakew and Mekonnen, 1997).

Workers do not know

While new technologies are being applied in agriculture, small-scale farming in particular is particularly characterized by low levels of technology and high workloads. Primitive hand-tools, hoes and ploughs, heavy loads and sustained physical work pose ergonomic hazards. One survey of occupational health and safety in small-scale farms found risks from the use of draught animals, farm implements and long hours with poor work postures, reported as risks by both researchers and workers (Loewenson, 1997a). These risks are reinforced by poor safety precautions and information. In small-scale farming, it is uncommon for farmers and workers to be aware of, let alone protect themselves against, the major occupational hazards (von Hildebrand, 1994).

Anaemia and reproductive hazards

Women suffer the same profile of risk as all other workers in the sector. There is, however, an additional dimension, related to both the quality of jobs that women do in the sector and their dual workload. Women's work-related health problems interact with and exacerbate illness caused by the work they do in the home and in care of dependents. At the same time, women's poor health status arising from poor diet, inadequate vitamin intake, and poor living and social conditions may increase risks of work-related cancers and the biotransformation of toxins and thus their toxicity (Pearce and Matos, 1994). Anaemia, for example, causes weakness and fatigue and leads to lowered work output. Anaemia is very prevalent among pregnant women in developing countries: the WHO estimated in 1982 that 60 per cent of these women suffered some level of anaemia (11gm/dl), a figure verified in more recent 1991 updates (Koblinsky et al., 1992). Women, like male workers, face reproductive hazards and toxins in agricultural work, such as pesticides (e.g. DBCP),¹ due to heat, stress or manual handling of heavy loads. This interacts with other problems such as undetected pelvic inflammatory disease which leads to problems in fertility, pregnancy and childbirth.

Such patterns of multiple exposures and multiple health outcomes may be exacerbated by the long hours of work women perform and by the fact that the largely female seasonal and non-permanent workforce often do not receive protective equipment or safety training (London, 1997). For example, women have been noted to do less well-organized work, applying pesticide by hand, while mechanical or backpack applicators are used only by the more skilled male permanent workers (Rutherford, 1996). Women's work is thus characterized by a high level of demands, with little control over the nature and content of the work. The conflicts and double burden they experience between the positive health gains of being employed and the negative health impacts of the way their work is organized, and the management of domestic responsibilities, have been found to lead to digestive disorders, sleep difficulties and musculoskeletal problems (Kothari et al., 1996). One study in India found the highest incidence of stillbirths, premature births and deaths during peak rice cultivation season, at a time when women's piecework intensified, involving squatting and bending for long periods (Smyre, 1992). In my own

research in Zimbabwe, non-permanent female workers reported higher levels of ill health in both themselves and their children under five during the few months in the year of piece wage work. They were less likely to use health services for these problems and more likely to allow disease to progress at these peak employment times due to the high opportunity costs of missing work when it is paid on a piece wage basis (Loewenson, 1989).

Public health risks and health outcomes

Occupational health on farms has already been noted to have a strong interaction with public health conditions. This arises partly due to the fact that people live and work on the farms, to the interaction of poverty and work-related diseases and to the environmental spillover of many of the occupational risks on farms. For example, there is much documented evidence of wider community exposure to pesticides due to contamination of foodstuffs during transport or storage, the diversion of agrochemical coated seed to human consumption, the presence of pesticides in water or food due to misuse of containers, or the contamination of groundwater, and pesticide residues on food (Ferrer and Cabral, 1994; London and Myers, 1995; Loewenson and Nhachi, 1996). Women and children have been found in some studies to comprise a high proportion of exposed and reported poisoning cases (Bwiti et al., 1987; Loewenson et al., 1991; London, 1997).

Migrant labour and poor living conditions have led to an increase in communicable diseases such as malaria (Packard, 1989). In small-scale agriculture, production and processing of agricultural products and domestic animals in or near homes expose families to occupational risks such as inorganic and organic dusts and zoonotic diseases (White and Myers, undated).

As mentioned earlier, the major health problems faced by women workers arise due to poor living and social environments and inadequate diets. The paradox persists that in areas where land is abundant, farmworkers are unable to complement their incomes through food production. This is particularly the case in single female-headed households where casual employment and insecure tenure undermine both the access to land and the time to grow food.

Occupational illness is often masked by the already high level of public health problems in the agricultural sector. Agricultural workers in Africa, for example, in both formal and infor-

mal sectors, have been noted to be among those with the highest levels of general ill health due to poverty, food insecurity, poor living conditions, poor access to health services and social underdevelopment (Jayne, Chisvo and Rukuni, 1994; Loewenson, 1992a). Poor working conditions and an uncertain future have also been associated with high alcohol consumption and interpersonal violence among agricultural worker communities (London, 1997; Loewenson, 1992a; McIvor, 1995; Djubang, 1994).

Under-reporting

Occupational illness and injury are also hidden by the poor coverage of occupational health services and lack of formal monitoring and reporting systems in large- and small-scale farms. This leads to most occupational injury and illness going unreported, and in consequence to negligible levels of compensation or none at all (Ivor, 1995; Kouabenan, 1990; Kahenya, 1996). Studies in South Africa suggest that only 5 per cent of deaths and about 20 per cent of hospital admissions due to pesticide poisoning are reported as part of the routine public health surveillance system, a figure that has remained unchanged for over 15 years despite knowledge on the part of the authorities about under-reporting. A programme aimed to increase reporting did increase reports tenfold, although private doctors still largely failed to notify cases (London, 1997).

Despite such under-reporting, ad hoc surveys suggest that there is a significant risk of occupational disease in agriculture (Noweir, 1986; Packard, 1989; Kitunga, 1996), including acute and/or chronic lung diseases, occupational skin diseases, haematologic cancers, degenerative musculoskeletal syndromes, hearing loss and stress-related mental disorders, particularly depression (Husman, Kangas, Klen, et al., 1989). There are diseases specifically related to agriculture such as cane cutters' tenosynovitis, cashew dermatitis, and bovine tuberculosis (Choudhry, 1989). Toxic dust organic syndrome is pronounced in grain, swine and dairy farming (Myers, 1990). Organic dusts from sugar cane, grain, cotton and coffee are noted to produce respiratory disorders, including bagassosis, occupational asthma and byssinosis (White and Myers, undated; Sekimpi et al., 1990). Agrochemicals are a major cause of morbidity, accounting for up to 14 per cent of all occupational injuries in the sector and 10 per cent of all fatal injuries (ILO, 1997). Research evidence suggests that

long-term occupational exposure to pesticides also leads to adverse chronic genotoxic, reproductive and immunotoxic effects (Buffin, 1997).

Gender inequalities pronounced

Women face particular problems in relation to this profile of risk and injury. As noted earlier, their employment and economic status weaken the control of occupational risks, while they experience negative gender disparities in public health from birth onwards, outweighing even the genetic advantages that girl children have over boy children, such as in infant mortality (Jhamba, 1994; Smyre, 1992). These gender inequalities are most pronounced in developing countries and have widened under recent structural adjustment and liberalization policies. They emerge in terms of poor nutrition, associated with poor diet, early onset of sexual, reproductive and maternity related health problems due to their poorer educational attainment and social status and respiratory and intestinal infections due to poor living conditions.

One source of increased female ill health as described is the close link between employment status and the living and social conditions that affect public health. In Swaziland, for example, many seasonal workers on pineapple estates are women hired on a seasonal basis with no guarantee of employment for the following season, regardless of how long they worked for the company. During this off-season period, many are reported to live in overcrowded and unhygienic housing surrounding the estate, making a living through brewing beer and prostitution. Their poor accommodation is conducive to such diseases such as tuberculosis (TB), cholera and diphtheria (McFaddon, 1982), and to sexually transmitted diseases and HIV/AIDS. HIV rates in Zimbabwe are extremely high in the centres near the large estates in the south of the country, which are also foci of female seasonal and migrant labour. Women on these estates were found in longitudinal surveys to depend on a range of informal income-generating activities between periods of seasonal employment, including exchange of sex for food, shelter and money (Loewenson, 1992a). Analysis of data in official annual reports on workers' health in Cameroon from 1991 to 1993 revealed that malaria, infectious diseases (such as HIV/AIDS) and dermatologic diseases were the leading causes of morbidity. The analysis also noted higher levels of TB

among workers on formal sector agricultural plantations, suggested to be due to poor housing and working conditions, poor access to health services, and HIV infection.

So the reported level of ill health and injury in women workers on farms, almost without exception, does not reflect the real burden of ill health. This lack of visibility of ill health outcomes weakens the case for resources to be targeted at preventing ill health. At the same time, the insecure nature of women's employment contracts in formal sector farming and the lack of adequate organization of social protection in the small-scale sector can lead to the costs of such illness being borne at personal or household level, and not within the production system. This draws attention to how health services are organized both to prevent and manage ill health, and how accessible these services are to women.

Measures for protecting the health of women workers in agriculture

The risks and health problems in agriculture are neither new nor unknown, and as with the major public health problems experienced, both the technology and knowledge exist to prevent them. This calls in part for an improved work environment and health standards on farms. Many early occupational health laws were specifically framed to exclude agricultural workplaces as well as small enterprises, on both counts leaving out formal and informal sector farming. More recent legal trends have widened the coverage to formal sector agriculture, but exclude small-scale peasant farming. Compensation law has generally been wider in its scope of coverage than occupational health and safety law, but still generally excludes small-scale farmers. Legal protection is also weaker for those with less secure contracts of employment, including those who work for in kind payments, such as obtains in small-scale farming.

Even where legal coverage applies, legal enforcement may be weak due to fragmentation, overlap and loopholes in the law, low coverage by labour officials, low levels of unionization among workers, poor occupational health surveillance systems and insufficient labour inspectors (ILO, 1997; Choudhry, 1989; Rother and London, 1998). Inspectorate systems are variable in the agricultural sector, with many basic services poor or even non-existent (Noweir, 1986; Bella, 1996; Kahenya, 1996; Kitunga, 1996; Loewenson, 1997). Small-scale

agricultural production is almost always excluded from occupational health and safety law and infrastructures. This may be sustained even as these sectors are integrated into formal markets, with occupational health regarded as a further cost to already vulnerable producers.

Support in dealing with domestic responsibilities

Legal enforcement may also be weakened by the low literacy and weak organization in the agricultural sector. Laws may well specify warning signs for toxic risks of pesticide use, for example, but the effectiveness of such warning signs is critically dependent on the level of understanding of what the signs mean, and this has generally been shown to be rather low and poorly backed by education programmes (OATUU/HSEP, 1996; Rother and London, 1998). Many of the constraints regarding coverage and implementation of standards affect women even more adversely, since the majority of them are in the small-scale sector and in non-permanent employment. Added to such constraints, women have lower levels of participation in industrial relations and trade union structures. Unless they benefit from some support to deal with their domestic responsibilities, they face time constraints in enhancing their participation in such structures.

Primary health care more beneficial

Public health services have wider coverage than occupational health services, but skills at primary care levels are often inadequate to make differential diagnoses of occupational morbidity and are poorly supported by occupational health specialists (Ndamba, Makaza, Kaondera, et al., 1991; Tedla and Yimam, 1986). Public health services expanded after the 1970s through national primary health care (PHC) approaches, including improvements in living environments, immunization, maternal and child health promotion, health education and in access to primary medical care services. The PHC approach also included the promotion of community health workers operating in small- and large-scale farm areas. It could be argued that women have gained more from the expansion in primary health care services than from the increased coverage of occupational health laws, given the more explicit inclusion of women's health issues in the former. Unlike the situation prevailing in largely male-dominated industrial relations system, women also took

on key roles as community health workers within the primary health care system. However, the insecure employment status of women also affected their use of PHC services, even where coverage expanded. In Zimbabwe, for example, women employees on large-scale farms had the highest rate of illnesses in a farm worker health survey, but did not seek health care for fear of losing work since they were casual employees (Loewenson, 1991).

Despite significant investments to improve services in rural areas, there are still shortfalls in public health system coverage in both large- and small-scale farms (ILO, 1997). Public health systems have also faced serious constraints under structural adjustment and liberalization programmes, particularly where they were state funded. In a recent survey in South Africa, for example, 31 per cent of 39 formal sector farms surveyed in the western Cape were found to have no form of first aid or basic health service on the farm. Of the first aiders present on other farms, few had any medical training (London, 1994). In a number of countries, schemes have been initiated to train primary care workers for farms, and these have recently incorporated the prevention of occupational and pesticide hazards (London and Myers, 1995; Loewenson, 1989). Such primary care schemes have been found to improve public health on farms (Loewenson et al., 1983), although their impact on occupational health has not been assessed.

Issues and conclusions

Historically, farm workers have been among the most disadvantaged and disorganized formal sector workers (Loewenson, 1992a). They are generally unskilled labour and are easily replaced. Many are migrants with few resources and vulnerable to employer victimization. This enterprise-level marginalization is often reproduced at the state level where their interests are rarely considered (Packard, 1989; Loewenson, 1992a; Rutherford, 1997). The strength of farmworker unions has also been weakened by the fact that until recent decades, autonomous trade unions on farms were circumscribed in a number of countries (Kamuzora, 1986; Loewenson, 1992a).

This paper shows that these conditions are worse for women, who hold the least secure jobs in the formal agricultural sector, and often lack control over land and outputs in small-scale farming. They are also worsened by the dual domestic and production workload women experience under conditions of poor

living, community and social environments, increasing their working hours and workload and generating a mixed profile of public health and occupational health problems.

Address the underlying problems

Sustainable interventions to improve the health and safety of women workers would therefore need to address underlying problems of non-permanent, piece wage and other low quality and insecure jobs, generate greater and year-round employment opportunities, including through off-farm employment, and enhance women's control over land, production inputs and market surpluses. Furthermore, there is a need to lighten the domestic workload of rural women through various forms of social support, including the provision of safe, accessible water supplies, adequate and accessible fuel and energy sources, and collective forms of childcare, such as community nursery schools.

A "cradle to grave" approach

Within work environments, there is a need for more active bipartite and state-supported intervention to identify, discuss and control risks, and in a legal and institutional environment where workers feel they do not risk their jobs when they act on health and safety. Literacy training and information inputs are critical elements of the capacity support for health and safety for all workers, including women. Within the small-scale farming sector, such interventions can be implemented through farmer organizations, and through other community-based organizations, such as health and women's groups. The spillover of work-related risks to the community and families also needs to be identified and controlled, for example by avoiding early re-entry in sprayed fields, provision of safe water supplies and control of chemical runoff into groundwater supplies, siting of farm villages and safe disposal of chemical containers. For chemical companies, a "cradle to grave" approach that follows risks into field use, and includes multisectoral cooperation to ensure safe use, application and disposal would enhance the management of chemical risks in the less well-organized farming sectors.

Integrate education into extension and market services

So, firstly, the paper suggests that managing occupational risks for women on large- and

small-scale farms needs to be set within a public health and primary health care framework for a number of reasons: proper public health services have wider coverage of rural areas than occupational health services, and particularly of women workers, given the explicit inclusion of maternal and child health programmes. Public health problems interact with work-related illness, and many workers will bring work-related problems to public health services. In a situation of scarce public resources, there is a need to recognize these conditions and maximize available resources and infrastructures to promote *both* public and occupational health. Secondly, the foregoing discussion underlines the need to ensure that workers on farms are protected by the labour legislation in force on farms, and to extend inspection services to rural areas for these laws to be implemented. Moreover, such standards and enforcement mechanisms need to be practically applicable to insecure, migrant and piece-wage workers if they are to make a difference to women's work on farms. As for the small-scale farming sector, there is a need to integrate educational efforts to promote safety standards into the support, extension and market services with which these groups interact.

Multi-stakeholder forums

Workers' health and safety rights have not been acquired without some struggle, nationally and on farms themselves. Agricultural workers' unions often lack the organizational structure, resources and skills to win these rights and adequately enforce wider legal gains (London and Myers, 1995). This signals a still poorly met need for investment in capacity development of these organizations directly and under wider union umbrellas. To overcome their isolation and strengthen their case, some peasant and farmworker unions, farming organizations and cooperatives, environmental and health groups, and state extension services have formed multi-stakeholder forums, including trade unions to raise consciousness about issues of concern in agricultural work. Local government structures have also been pointed to as important agents for raising health and social standards on farms. For women, who often do not participate in these structures, there is a need to identify relevant communication channels and organizational frameworks and make explicit effort to invest in these.

Power differences wider for women

Whatever the case, the disempowerment of the workers themselves would need to be addressed. In agriculture, generally, there is a significant power imbalance between workers and employers in the large-scale sector; and between smallholder farmers and formal market and state institutions in the small-scale sector. Where gender inequity exists, and this is found in many countries north and south, these power differences are even wider for women. Hence interventions need to confront the paternalism, oppression, isolation and social underdevelopment that has characterized the history of these sectors, and which workers, and particularly women workers, on large-scale farms continue to experience (du Toit, 1996; Rutherford, 1997). Dealing with occupational and public health issues in the agricultural sector calls for both technical inputs, and for interventions that deal with issues of deprivation and imbalances of power.

Jobless, ruthless, voiceless, rootless and futureless

While there are many specific, mitigatory interventions, the negative trend towards casual, low quality jobs and growing poverty in many rural areas, particularly in Africa, calls for more in-depth analysis of the economic causes of these trends. The UNDP Human Development Reports have in recent years highlighted concern about the current paths to growth, and the need for greater consideration of the human and social dimensions of growth, both in order to enhance equity and ensure more sustainable growth paths. The description in this article of women's work in large- and small-scale farms highlights the contradiction between the UNDP's vision of sustainable development and these women's poor quality jobs (jobless growth), low income work (ruthless growth), poor control over work (voiceless growth), poor social support (rootless growth) and inadequate attention to reproductive hazards (futureless growth). Hence, alongside the measures which must be put in place to guard against the consequences of such negative paths to growth, is a parallel need to identify and pursue paths to growth that better enhance rural women's economic and labour market position.

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Note

¹ DBCP: dibromochloropropane, used to treat soil to protect the roots of fruits and vegetables from certain pests.

Uganda: Training, education and information on health, safety and environment – National Union of Plantation and Agricultural Workers (NUPAW)

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Agriculture represents one of the most hazardous sectors in both developing and developed countries. It is ranked as one of the three most hazardous industries together with mining and construction. Machinery such as tractors, along with cutting tools, causes the highest frequency and fatality rates of injuries. Exposure to pesticides and other agrochemicals constitute major occupational hazards which can result in poisoning and death, and in certain cases are related to cancers and affect reproductive health.

In Africa and other developing countries, the situation is made worse by the uncontrolled use of banned or severely restricted chemicals imported from the industrialized countries where they are no longer in use. Furthermore, the agricultural worker lives and works in the same environment, therefore for him/her occupational health and general health are more closely related. In a rural environment there is no clear distinction between the working and living conditions of those engaged in agricultural work. The many workers and their families who live where they work face further dangers, for example exposure to pesticides and agrochemicals in water and air. Poor housing and overcrowding in the living quarters called “labour camps”; poor sanitation; cases of cholera; dysentery; AIDS; and death from these diseases are prevalent among the workers due to inadequate medical care.

Apart from the human suffering involved and notoriously low level of wages of the workers, the economic loss through accidents and ill health places enormous burdens on the enterprise and economies alike. If the existing situation in the agricultural sector is to be improved, then training and education for agricultural workers and capacity building initiatives for their trade union are needed.

Workers’ education

A major means to achieve the aforementioned goals of training and capacity building is through workers’ education directed towards social change which may result from union strength and the integration of working people into the trade union. It is a specialized branch of adult education which addresses the educational needs and interests arising out of workers’ participation in the trade union movement. A high level of membership and the quality of well informed members measure the strength of any organization. The primary thrust of any workers’ education effort is to step up recruitment and organization of workers into a strong trade union. It is on this strength that workers can engage effectively in a collective bargaining campaign to negotiate any positive changes in their workplaces and in the society where they live.

Such education should not be a single, isolated event but a continuous process integrated into ongoing trade union activity. Education should therefore target all members: the top leadership to enable them to run the organization according to the principles for which it was established; the middle leadership for effective linkages between the rank and file and the top leadership; then the general membership to strengthen the union at grass-root level. Special programmes should address the issues of women members and young workers; specialized education and training, e.g. on health, safety and environment, child labour should be incorporated into the overall education policy.

As has been observed, workers united within a strong trade union, well informed and trained, will influence the trend of events affecting them at the workplace. In the area of safety and health, the overall rationale of training and education is to raise or improve awareness of

safety and health hazards and protect the environment, impart knowledge of the causes of occupational illness and injury, and promote the implementation of effective prevention measures. The specific purpose and impetus of training will, however, vary according to the different target groups. There are three levels of education and training in occupational health and safety and environment:

1. Awareness;
2. Training for specific needs; and
3. Specialization.

These components are not separate but are rather part of a continuum. Any person may require information at all three levels, e.g. policy-makers, legislation managers and workers. Within these categories, many people require additional training in more specific tasks, e.g. health and safety officers or health and safety representatives need to acquire more information through intensive training.

All categories – workers, employers, and the Government – should participate in improving working conditions, but those who do not directly suffer the problem may be tempted to turn a blind eye without concerted workplace action on the part of workers. Negotiating health and safety issues must therefore be an integral part of organized workers' action. This means building skill and knowledge, organization, collective action and unity if we are to change a work and living environment which destroys our health. Unions should start education programmes to train trade union leaders, health and safety educators and branch and shop floor health and safety representatives in order to strive for integrated action around health and safety issues.

Health and safety training in NUPAW (U)

The NUPAW Uganda is the largest trade union organization in Uganda. It has a total membership of 47,000 including 15,000 women, with a potential of 150,000 members. NUPAW (U) is affiliated to the National Organization of Trade Unions (NOTU) (with 75,000 members) and to the International Union of Food, Agricultural, Hotel, Restaurants, Catering, Tobacco and Allied Workers' Association (IUF) (2.6 million members from 118 trade unions in 334 countries). NUPAW represents workers in the tea and sugar plantations and general agriculture, e.g. rice farmers, flower farms and other agriculture

related industries. In 1997, NUPAW had 60,000 members but during the military rule (1971-79), the economy was completely ruined and trade union activities were very minimal. All the tea and sugar estates had grown into bushes. Trade union members lost their jobs and by the end of 1979, NUPAW (U) had only 3,000 members left in the sugar estates.

Training for cadres

The rehabilitation of industries after the Tanzania-Uganda war led to a renewal of economic activities in Uganda in the aftermath of a devastating military rule and the war. In 1982, with only three operating branches and 3,200 members, NUPAW started educating the new elected leaders with assistance from the former International Federation of Plantation Agricultural and Allied Workers (IFPAAW). IFPAAW members of the National Executive Council and the Secretariat were trained between 1982 and 1986 at the Tom Mboya Labour College in Kisumu, Kenya. These cadres were trained in trade union organization, collective bargaining, grievance handling and leadership-related issues. Such training helped the leaders to appreciate the problems of workers which included uncooperative and anti-union employers, obsolete labour laws, and state interference in trade union affairs.

The "educated leadership" started reorganizing the workers into a trade union. At the trade union congress in 1986, the membership rose to 6,000 in seven branches, thanks to the IFPAAW education programme. In order to consolidate what it had achieved since 1980 and recruit more members, NUPAW developed a workers' education project based on study circles. The project was carried out in 1989 and 40 study circle leaders were trained. The NUPAW Study Circle Education and Trade Union Development Project (1990-97) trained 120 study circle leaders. The leaders then formed over 500 study circle groups benefiting over 10,000 members. Study circle education is based on well-recognized principles of adult learning theory, including the following:

- Adults are especially self-motivated, in terms of acquiring information that has immediate relevance to their lives and work, so they especially welcome practical tools which could help them solve problems in the workplace.
- Adults learn best by building on what they already know, incorporating new ideas into

their existing reservoir of learning. They also wish to be respected for their experience. Therefore the most effective methods are those which are participatory in character and encourage reflection.

- Adults learn in different ways. Each person has a different learning style. So an education session will work best if participants have the opportunity to engage in multiple learning methodologies involving audio visuals, question-and-answer sessions, simulation or role-play, reading, writing, practising with equipment and discussing critical issues. Variety not only ensures that the cognitive process is addressed but also provides repetition to reinforce learning and of course sustain interest.
- Adults learn best when they are actively engaged: when they “learn by doing” they are more responsive to active participatory methods than to passive ones. Lectures and written materials of course, have their place in a full repertoire of methods, but case studies, role plays, handouts, simulation and other small group activities which allow each individual to be involved are more likely to result in the retention and application of new learning. Ideally, each session involves interaction among participants and includes opportunities for learning new information, applying new skills and discussing the causes of problems and exploring solutions. So the issues raised for trade union action originated in these study circles. Some of the problems identified were solved at the shop floor, for example that of “free riders” or workers who did not want to join the union but were enjoying the benefits negotiated for the members and who were easily recruited as a result of trade union action. Some problems were raised as warranting negotiations for inclusion in the collective bargaining agreement (CBA), for example a one-hour break for breastfeeding mothers to allow them to breastfeed their children during working hours, or paternity leave for seven days to allow a member to attend to his wife at childbirth and during the post-natal period. Some issues were addressed within the overall framework of union policy, for example occupational health and safety.

In 1989, some workers from Kasaku Tea Estates filed complaints to the effect that they had become impotent. The case originated in

the study circle groups of one of the Labour Camps called Rusesa when they were discussing protective wear for tea pluckers. The participants became concerned when one of them said he had worked as a tea plucker for the past 16 years and that for the past 15 years he had been experiencing weakness in his sexual performance, that his condition had completely deteriorated and that he was eventually living alone because he could not arouse any woman’s interest. This issue was taken up through the Union Branch to the National Executive Council. Further investigations revealed that there were 11 such cases of impotence in Kasaku Tea Estates alone. The union took up the matter with management, and the Department of Occupational Health and Safety of the Ministry of Labour and IFPAAW were informed about it. It is suspected that these workers are victims of chemical exposure, apparently of low doses which are used in these tea plantations. The Kasaku case caused the union to draw up a policy of occupational health and safety, endorsed by the Delegates Conference in 1991, and which sought to achieve the following objectives:

- improve the health and safety and working environment for all workers;
- build union cadres in health and safety from the shopfloor to the national level and ensure that these cadres use the mainstream structures to organize and protect workers’ interests;
- form health and safety committees at all branches and at national level and use them to discuss and negotiate health and safety issues;
- train union health and safety representatives/officers at shopfloor, branch and national levels to represent workers on health and safety issues, disputes and negotiations to enable the union mainstream to implement health and safety proposals;
- educate and inform workers on health and safety;
- monitor and investigate the health and safety problems facing workers and use the findings to improve conditions; and
- coordinate union activities with those of other institutions involved in health and safety and represent workers in health and safety structures.

Implementing the policy through education study circles (ESCs)

The Study Circle Education and Trade Union Development Project created an opportunity for NUPAW to identify HSC problems in work places for the Health and Safety Committee wherever it operates and find solutions. The study circle sessions did not only help to recruit members and strengthen the union but also helped to create awareness about health and safety hazards in workplaces.

The project components are:

1. Training and retraining of study circles in study circles methodologies;
2. Courses for branch officials and shop stewards;
3. Courses for women activists;
4. Formation of study circles; and
5. Development of information/study materials.

Project

Study circle leaders

These leaders are further trained in health, safety and environment so that they in turn impart knowledge to the study circle groups. Such training includes identification and control of hazards.

Branch officials and shop stewards

This is a very important target group representing as it does the link between employers and those in charge of implementing union policy. Resolutions arising out of training sessions for these groups are actively followed up by both the employers and the union. Items scheduled for incorporation into collective bargaining agreements, policy statements and campaign goals usually originate from these target groups either from their meetings or training courses. They should therefore be better formulated and more comprehensive. In most countries workplace improvement has resulted solely from organized workers' action.

Health and safety representatives are elected from among this group. In addition to knowing the hazards and how to protect workers from them, training courses are designed for this group to learn about pesticides, accident investigation, compensation and rehabilitation, health and safety structures and functions, first aid, labor laws, ILO Conventions and international solidarity.

Training for women activists

Women workers have special problems because they have different physical frames. They bear children and breastfeed. They perform most of the unpaid domestic labour in our society, which means that they assume a dou-

Examples of hazards

<i>Mechanical hazards</i>	<i>Physical hazards</i>	<i>Ergonomics and work organization hazards</i>	<i>Biological hazards</i>	<i>Chemical hazards</i>
Unguarded hazardous moving parts	Impulse noise	Manual handling of heavy loads	Sources of infection	Hazardous chemicals in use
Floor with waste or slippery surfaces	Noise above 90 dB	Poor work posture	Snake bites	Chemicals not stored under lock
Poor house-keeping	Poor electrical installation	Long hours of work	Insect stings	Hazardous chemicals not properly labelled
Risk of pressure bursts/leakages	Very high temperature	Casual labour	Biting by dangerous animals	Hazardous chemicals in use by pregnant women
	Dust	Shift/night shifts	Contact with human blood	
	Poor lighting Vibration	Isolated work		

ble workload and are exposed to hazards in both workplaces.

The course for women activists covers various women's issues that affect them at the workplace, in the trade unions and in the society. Some of the major topical issues are as follows:

- reproductive hazards: because women carry the unborn child and breastfeed, many of the hazards a woman worker is exposed to also affect the unborn child. They can cause abortion, stillbirth, abnormal development or even death of the child if not controlled.
- Women exposed to certain chemicals, such as diethylstilboestrol, can have children that develop cancer later in life.
- Women exposed to pesticides may abort or bear deformed children.
- Women who are exposed to chemicals such as lead, vinyl chloride, high levels of solvents or organochlorine pesticides may pass the chemical to the infant through breast milk.
- Women who lift heavy objects, spend long hours standing, are exposed to heat or vibration, can suffer high blood pressure, back pain, abortion; may deliver a low birth baby or have an abnormal delivery.

Study circle group meetings

Most of the study circle members are rank and file members and meet at their convenience. Most groups are formed during working hours – the union has negotiated a collective bargaining agreement with most employers for time off with pay for trade union education and trade union work, so the time and venue are arranged by the local union branch and the management of the enterprise concerned. Each branch has in place a dozen study circle leaders who organize the study circles.

Discussion in study circles is based on the adult learning principles referred to earlier. The collective findings or decisions of the study circles are used to solve problems or are forwarded to higher levels for action. So many changes have taken place at workplaces as a result of study circles education, for example:

- child labour is prohibited in Kakira Sugar Works;
- Health and Safety Committees have been formed at all the branches;

- dramatic performances at various estates have been creating awareness of chemical hazards; and
- mobile shelters have been provided for breastfeeding mothers in Kakira Sugar Works.

Development of study materials

A study circle leaders' training manual was developed to help sustain the project through ongoing education and training information, and booklets with basic information on health, safety and environment was produced as a means to raise awareness and strengthen the Global Pesticide Project (GPP). In 1994, IFPAAW merged with IUF and NUPAW became member of IUF which is composed of 334 trade unions in 118 countries representing a combined membership of 2.6 million employed in agriculture and in the preparation and manufacture of food and beverages, in hotels, restaurant and catering services, and in all stages of tobacco processing.

The IUF integrated the study circle education project into its activities which meant that NUPAW was to continue with its programme of study circles. As indicated earlier, study circle activities can yield rich results, so in 1997 pesticides and other hazardous chemicals were identified as a major issue to be addressed.

IUF resolutions led to GPP

The 23rd IUF Congress expressed grave concern with regard to the uncontrolled use of chemicals, especially pesticides, all over the world, particularly in developing countries. There are reports from the agricultural workers' unions including NUPAW, which show that hundreds of thousands of agricultural workers face illness and death due to insufficient information on the lack of protective equipment and use of materials which are known to be hazardous to human health. They resolved that:

- the IUF should work to ensure the creation of health and safety forum at global, national, regional, local and work place level;
- the IUF should strive towards a global ban of the pesticides on the "Dirty Dozen" list; and
- use should be made of the Pesticides Action Network (PAN).

It was on the basis of the foregoing resolutions that IUF developed the Global Pesticides

Project to ensure that agricultural workers around can share the results of research and exchange experiences.

Goal of GPP

The overall goal of IUF's Global Pesticides Project is to build a national and regional union to work on local, national, regional and international pesticides issues within the context of sustainable agriculture and linked to integrated management, pollution prevention and genetically manipulated organism biotechnology.

In the first phase (1998-2000), GPP is focusing on four pilot African countries, Ghana, Tanzania, Uganda and Zimbabwe and six affiliated unions are involved, as follows:

- General Agriculture Workers' Union of Ghana (GAWU);
- National Union of Cooperative Movement Workers (NUCMW), Uganda;
- Tanzania Plantation and Agricultural Workers' Union (TPAWU);
- Uganda Hotels, Food and Allied Workers Union (UHFAWU);
- National Union of Plantation and Agricultural Workers (NUPAW), Uganda; and
- General Agricultural Plantation Workers of Zimbabwe (GAPWUZ).

Target groups include grass-root trade union members, shop stewards, branch officials, union committee members, national union leaders and officers, pesticides policy-makers and environment/consumer organizations.

The Project builds on the earlier trade union ESCs Project launched in Africa (Tanzania, Uganda, and Zimbabwe) which is linked to bilateral general health and safety activities in Uganda and Zimbabwe carried out by the Swedish Agricultural Trade Unions (SLF).

GPP activities

The GPP is extending trade union ESCs to provide training on pesticides, and on health, safety and environment issues (HSE). As explained earlier, ESCs are courses designed to provide basic and advanced training for grass-root members working on farms and plantations, and for branch officials and shop stewards, on all aspects of trade union organization, recruitment and activity, with strong emphasis on gender issues and on training of workers

and trade union members. In NUPAW, at least 30 per cent of participants of any trade union education activity must be women. Special programmes for women only are also organized. There are 80 active study circle leaders in NUPAW, including *women*, who are continuing with the programme.

Bilateral activities

The Swedish Agricultural Workers (SLF) are engaged in bilateral cooperation with some trade unions in Africa, for example SLF branch 1 has been involved in bilateral activities in the field of health and safety with General Agriculture and Plantation Workers of Zimbabwe (GAPWZ) for over ten years. Similarly, SLF branch 5 has been cooperating with NUPAW and NUCMU of Uganda. SLF branch 5 started cooperation and solidarity activities with NUPAW in 1997. Since 1998, it has assisted NUPAW in capacity building for general health and safety activities. It has provided training for study circle leaders, branch officials and shop stewards, and study materials and equipment to strengthen health and safety training for NUPAW members.

SLF Programme: Training activities

The training programme was implemented in three steps; 40 study circle leaders were selected to participate in the training programme.

Step One – two weeks

At this stage the 40 participants were taught about health and safety and its importance. Since agricultural workers work and live in the same areas, part of the training aimed at developing awareness of living conditions – the external environment, water, sanitation, hygiene and health. Such training was important because some illnesses which affect workers and their families are caused by poor sanitation, lack of hygiene and poor housekeeping.

With regard to working conditions, participants were taught the FASE method (Find – Analyse – Solve – Evaluate). This method, as indicated, involves four stages: drawing up an inventory of hazardous working conditions after identifying the problems; suggesting solutions; carrying out an evaluation to find out whether or not the problem is solved; in the event that it was not solved, take another course of action. Other areas covered included the

study of national legislation on safety and health and collective agreement in force. In the case of NUPAW, health and safety problems were inventoried according to the following categories:

- ergonomic;
- dust;
- noise and vibrations, their effects on the body, ears in particular, and protective measures; and
- chemicals and solvents, their effects on workers' health and preventive measures.

Activities also included field visits to the sugar factory and the plantations and an assignment designed to apply the FASE method in Step Two of the course.

Step Two – one week

During this phase, the participants had to present a report based on the assignment given in Step One for discussions. Then they were taught first aid; accident prevention; how to control fire explosions and deal with electrical hazards; to wear adequate protective clothing; and measure light and noise with digital equipment. At the end of Step Two, participants were to practise what they had learnt using study circle methodology to enable them to spread knowledge of health and safety to all the groups involved in the study circles.

Step Three – one week

Only 15 selected study circles participated in this step. They received training since their role was to help set up health and safety committees at all levels of the union structure; draw up and implement the union's health and safety education and training programmes; negotiate and take up health and safety issues with employers and the Government; feed such issues into the IUF network; reach out and investigate the health and safety problems facing workers and use the findings to improve their condition. In a nutshell, they were to ensure the implementation of NUPAW's health and safety policy. The areas covered in this third step included:

- drafting proposals for health and safety collective bargaining agreements;
- ILO Conventions on health, safety and environment;
- the functions of health and safety committees;

- the role of health and safety representatives; and
- planning and organizing health and safety courses.

All these activities were carried out with the participation of health and safety experts from SLF.

Issues raised during training

First, many agricultural workers do not realize that their work is dangerous.

There is general lack of awareness on the part of the workers about the serious occupational hazards in their work which threaten their own health and safety, their families' health, as well as the society at large and the environment. In cases where workers do have some degree of awareness of the dangers of their work, they usually lack the training needed to reduce the risks involved and improve working conditions by learning appropriate work habits.

Secondly, many workers, because of poverty, are forced to take risks and are often resigned. Working and living conditions on plantations are generally extremely poor. Since the workers are poor, they willingly accept any kind of job offer in order to avoid starvation. However, a major problem is the failure of employers to supply adequate and accessible information to workers about the chemicals they use; nor do they provide the protective clothing needed to handle or use pesticides. Legislation on pesticides is also inadequate, nor is any legislation governing the use of pesticides and pesticides poisoning enforced. Cases of chemical poisoning are notoriously underreported. Sprayers, pickers, weeders and all workers who have been exposed to varying degrees of pesticides leave the fields without being able to wash up due to lack of facilities or clean water. They return home in the same clothing worn at work, carrying the pesticides to their homes and families. There is no sewage system for dwellings on the plantations and workers' homes seldom meet even the minimum housing requirements.

GPP intervention

Under the GPP programme, NUPAW has tried to address the above issues through the following strategies:

1. Health and safety committees are established at all levels of NUPAW structures for

the purpose of implementing the union's health and safety policy.

2. Ongoing study circle education will spread health and safety knowledge among the union members participating in the study circles.
3. The appointed National Coordinator on Health, Safety and Environment oversees the implementation of the GPP Project.

Implementing the GPP Project

As mentioned elsewhere, there is unbridled use of chemicals, especially pesticides, all over the world, particularly in the developing countries. The use of pesticides not only endangers the lives and health of consumers, agricultural workers and their children by causing cancers and birth defects, but also pollutes the environment, contaminating earth, air and water.

Information needs

While acknowledging the clear benefit that chemicals provide to our daily lives, it is essential to obtain comprehensive and reliable information on the chemicals we are to use in order to be able to handle them in a safe and sustainable way. Sound chemicals management requires adequate information on the nature, uses, hazards/risks, effects, control and disposal of chemicals. It is not enough to know that data is available, but also to know where it can be accessed most effectively. Such information is needed for the protection of human health and the environment throughout the stages of the chemical life cycle from production/extraction/import, transport, storage and use through re-use, recycling, export and disposal. It is also needed for policy-making, e.g. set log environment standards with regard to registration, regulation etc., transport, emergency response, prevention of occupational accidents, and in the context of education and raising awareness.

The National Health, Safety and Environment Coordinators of the GPP projects in Ghana, Tanzania, Uganda and Zimbabwe were trained at The Pesticide Trust, London, in the areas of needs, sources, accessibility and utilization of information.

Information system on chemical management

In order to facilitate the flow of information, a system should be put in place. The benefit of an information system is that it facilitates access, exchange and dissemination of information with regard to chemical management for all stakeholders and makes it easier for those who need information to know where to obtain it.

Uses of information

Internally, the information accessed is used by workers, the Health and Safety Committees, study circle leaders, branch officials, and trade union executives; nationally, by other trade unions, government organizations, e.g. the Ministry of Agriculture, and by NGOs, e.g. National Environment Management Authority (NEMA). Internationally, such information may be accessed by the IUF Secretariat, IUF affiliates, other international trade unions, or international agencies such as the Food and Agriculture Organization (FAO), the World Health Organization (WHO), the International Labour Organization (ILO), the Organization of Economic Cooperation and Development (OECD), the United Nations Environment Programme (UNEP).

Types of Information

Chemical-specific information

This should include the physical and chemical properties of a substance, its uses, human and environmental exposure effects, emergency measures to counteract accidents/spillage, disposal methods, regulatory measures, trade name, common name, scientific name, active ingredient formulation, and toxicity, etc.

Environmental information

This should include pollution release, transfer data, as well as information on persistence, biodegradability, bioaccumulation and possible chemical reactions.

Worker-related information

This should include safety data sheets, safety measure and the safe use of pesticides and equipment, easily understood safe handling instructions/pictograms. Other types of information which need to be provided include

data on cases of poisoning and accidents, data on use quantities, and types, as well as the geographical area where such chemical pesticides are used.

Trade-related information

This should include statistics of imports/exports; national production and formulation of chemicals; advice on safe transportation of these substances; and on labelling, packaging and storage methods; as well as where they are to be used.

Regulatory/legal information

This should include relevant national laws enacted and/or enforced; regulations; and matters pertaining to the ratification and implementation of international labour Conventions and other agreements ratified by the Government.

Sources of information

Government Ministries, Uganda

Ministries of Agriculture, Health, Labour, Trade and Industry, Transport, National Environment Management Authority (NEMA), Labour Inspectorates.

Industry/agriculture

Companies produce material data sheets on the products they produce and export and these contain valuable information with regard to their effects on the safety and health of workers, emissions, and safe transport and handling.

Research and academic institutions

This source includes university and scientific research centres, libraries documenting research as well as international documentation centres.

Public interest groups

Another vital source of information is through environmental NGO's consumer groups and other public interest group.

Emergency response centres

Information can also be found in hospitals and local clinics and public services (emergency and security) authorities which provide

information on cases of accidents incidents, poisoning spills, they can also provide advice on symptoms and diagnosis, antidotes, treatment and care, prevention methods and clean-up measures.

International sources

- *Food and Agriculture Organization (FAO)*

FAO was founded in October 1945 and is the largest autonomous agency with the United Nations system. FAO is active in dealing with food and agricultural emergencies. It has a wide range and comprehensive publications on crop protection and pesticide issues.

- *International Labour Organization (ILO)*

ILO has a long-standing concern over health and safety at the workplace and has produced a convention concerning safety in the use of chemicals at work (ILO Convention No. 170). The ILO also participates in the International Programme on Chemical Safety (ICPS).

- *World Health Organization (WHO)*

Within the ambit of ICPS, WHO works with the ILO and United Nations Environment Programme UNEP chemicals to produce the WHO *Recommended Classification of Pesticides by Hazard*, providing a guide to the acute toxicity classification of pesticide active ingredients and their formulations. WHO also works with ICPS to produce Environmental Health criteria series of monographs on pesticides, providing a guide to health and environmental hazards. With FAO, WHO is the joint sponsor of the Codex Alimentarius (Codex), which sets standards for pesticides in food and produce.

- *United Nations Environment Programme (UNEP)*

UNEP has information on the following programmes and projects e.g.

- Global Environmental Epidemiology Network;
- Pollutant Release and Transfer Registry (PRTR);
- Prior Informed Consent (PIC);
- Persistent Organic Pollutants (POPs); and chemicals.

- *Organization for Economic Cooperation Development (OECD)*

The OECD has produced *Guidelines for Aid Agencies on Pest and Pesticides Management*.

- *CAB (Commonwealth Agricultural Bureaux) International*

CAB is an international treaty of 37 Member countries that provide services worldwide to agriculture. Its mission is to help improve welfare worldwide through dissemination/application and generation of scientific knowledge in support of sustainable development, with emphasis on agriculture, forestry, human health and the management of natural resources and with particular attention to the needs of developing countries.

- *Pesticides Action Network (PAN)*

PAN is an international coalition of volunteer groups, civil society, NGOs and individuals who advocate ecologically sound practices in place of pesticides. PAN is also involved in local, national and international advocacy work like campaigning against the “Dirty Dozen” and in efforts to promote sustainable agriculture and rural development.

There are many more international sources of information.

- *Industry associations*

Industry and Industry Associations can provide information essential to sound chemical management, for example, the Global Crop Protection Federation (GCPF), formerly GIPAP (International Group of National Association of Manufacturers of Agrochemical Products) is the principal worldwide representative body of the agrochemical industry. GCPF publishes position papers, monographs on most of the major pesticides issues and a regular newsletter. GCPF also runs nine Safe Use Projects in Guatemala, Kenya and Thailand.

New training needs

The Global Pesticides Project was developed to support the implementation of two resolutions adopted by the IUF Agricultural Trade Group World Conference (1998) which urged IUF affiliates to:

1. Participate in the respective National Coordinating Team developing the national pro-

file to assess the national infrastructure for the management of chemicals plus any relevant action programme resulting from the profile. This will help to ensure that the national profile reflects the problems facing agricultural workers, their families and communities, as well as the measures to be taken by the Government and other relevant stakeholders, to address the problems highlighted by the national profile.

2. (a) Press for speedy ratification of the Rotterdam Convention on the Prior Informal Consent (PIC) Procedure for certain Hazardous Chemicals in International Trade (1998)
- (b) Support the IUF campaign to collect data on pesticide user incidents systematically (as per convention criteria) and to report to the relevant government/PIC authority in order to integrate the pesticides causing these incidents into the PIC procedure.

This situation has prompted NUPAW to draw up new strategies to adopt action plans as a follow up to the resolution. Although the GPP is building on the EAC activities, there are new training needs identified as follows:

1. Safety in the use of chemicals;
2. Identification, classification and labelling of chemicals;
3. Chemical Safety Data Sheets;
4. Data Collection and Analysis, cases of pesticides user incidents and severely hazardous formulations;
5. Integrated Pest Management Information.

Networking

NUPAW plans to strengthen networking activities within the union structures, with IUF structures and international NGOs, e.g. PAN, Pesticide Trust, CABI, for the purpose of accessing information and collecting educational materials. Such networking can further be strengthened with visits to organizations working on pesticides, study tours, and affiliation to organizations like PAN.

Information/documentation

NUPAW is striving to create a “clearing house” for dissemination of information among workers in terms of documents and

findings, action plans and other information, and more so create a data base for all records.

Available information technology: e-mail, CD ROM and Internet will facilitate the project.

Advocacy

Within its overall and continuing activity, NUPAW is advocating the Ugandan Government to implement the United Nations Conference on Environment and Development (UNCED), the Earth Summit, Brazil 1992, Agenda 21, particularly Chapter 19, on Environmentally Sound Management of Toxic Chemicals which includes development of national profiles to assess the national information structure for management of chemicals and ratification of the PIC Convention.

Conclusion

The unbridled use of chemicals, especially pesticides, causing illness and death among agricultural workers due to insufficient information, lack of protective equipment and the use of materials which are known to be hazardous to human health, compound already existing problems like low wages, poor housing, lack of training and obsolete labour laws. The way forward must be for IUF and affiliates to work on promoting sustainable agriculture and rural development through national campaigning, recruitment, organization and training, raising awareness of the extent of the problem, and collective action to improve the situation.

Pesticides in agriculture: the extent of the problem in Asia

Annie Rice

Information officer
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A basic knowledge of the extent of pesticide use in any country is the first step in ensuring a safe and healthy working environment for agricultural workers, and in promoting sustainable development in the agricultural sector. Developing a clear awareness of the issues involved and the extent of occupational and environmental health effects, then using the knowledge gained for effective action to bring about improvements, will provide a basis on which to develop local and national priorities and strategies for action.

Hazards may be aggravated

Evaluating the impact of pesticides in any one country will depend on many factors. They include: the relative importance of the agricultural sector; how many people are engaged in agricultural work; land use patterns; the types of crop cultivated; and the type and evolution of pesticides used. Occupational and environmental health effects of pesticide use will also depend on quantity and use patterns, the intrinsic toxicity of individual pesticides and the degree of individual exposure, as defined by the manner of application, the type of formulation, environmental mobility of the pesticide, etc. In addition, it must be remembered that any hazards relating to the use of modern agricultural techniques may be aggravated by exposure to severe climatic conditions, great physical effort, strenuous and irregular working hours, isolation, and other physical and social factors such as malnutrition, low standards of living and inadequate levels of community hygiene.

The population at risk

While the population at risk will obviously vary from country to country, depending on all the above-mentioned factors, agriculture will always be a high risk activity in terms of the sheer numbers of accidents and diseases

among the workforce. Almost half of the world's labour force, or over 1.3 billion persons, work on the land. Eighty per cent of these are to be found in Asia, and two countries alone – China and India – account for over 60 per cent of the world's agricultural labour force, and for 78 per cent of that of Asia (see Figure 1).

Although the proportion of the workforce engaged in agriculture is under 10 per cent in the more developed countries of the region, in most developing countries agriculture supports a significant proportion of the workforce, as high as 60 per cent, and even over 90 per cent in extreme cases such as Nepal (see Table 1).

Agriculture's contribution to gross domestic product (GDP), although important, is invariably much smaller. As countries become richer, agriculture's share of GDP shrinks and fewer people work on the land. Thus, the world's economically active population working in agriculture is expected to fall from 47.1 per cent in 1996 to 42 per cent by the year 2000, and to 38 per cent by 2010. Even so, in the countries of South Asia the agricultural labour force is still expected to grow and its share projected to remain above 50 per cent. These countries

Figure 1. Economically active population in agriculture, 1998

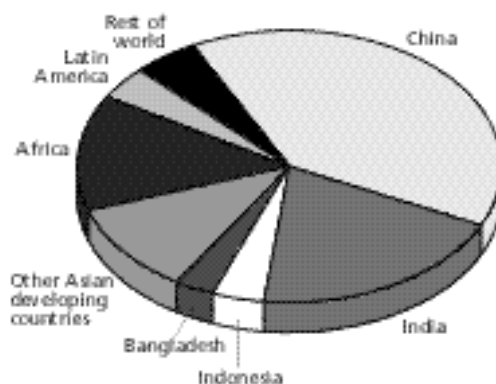


Table 1. The labour force in agriculture

	Percentage of labour force in agriculture 1998 ^a	Agriculture value added as per cent of GDP, 1998 ^b
Australia	4.7	3
Bangladesh	57.7	23
Cambodia	70.8	51
China	68	18
Fiji	40.8	24.5 ^c
India	60.5	25
Indonesia	49.7	16
Japan	4.6	2
Republic of Korea	11.3	7
LaoPDR	76.7	52
Malaysia	20.2	12
Mongolia	25.7	33
Nepal	93.2	40
New Zealand	9.2	8.1 ^c
Pakistan	47.9	25
Papua New Guinea	75.2	28
Philippines	40.8	17
Sri Lanka	46.1	22
Thailand	58	11
Viet Nam	68.2	26
World	45.6	5

Sources: ^a FAOSTAT, 1999; ^b World Bank, 1999; ^c 1987 figures, *The Economist*, 1991.

and those of East Asia, where agricultural workers still make up 47 per cent of the workforce, will remain predominately agricultural over the next 15 to 20 years.

While over half the population may work or depend on the agricultural sector in many of the countries of the region, it also happens that agriculture is a sector traditionally neglected as a result of the emphasis placed on industrial development and on the rapid rate of urbanization.

Land use

Another factor that is important in defining who is at risk, and where, is land use. Overall, only just over 11 per cent of the world's land area is used for arable farming, including permanent crops such as tea and coffee. But for individual countries, these proportions can be much greater. For example, 66.8 per cent of the total land area of Bangladesh is given over to arable farming, potentially exposing huge numbers of workers and rural communities to increased risk from poisonings from agrochemicals. Permanent pasture, on the other hand, dominates a number of countries in the region, reaching almost 75 per cent of the land area of Mongolia, for instance. This type of land use does not require the same amount of input in agricultural chemicals, so does not entail the same magnitude of risk in this respect as for arable farming (see Table 2).

Table 2. Land use as percentage of total land area

	Arable crops, 1997 ^a	Permanent crops, 1997 ^a	Permanent pasture, 1996 ^b
Australia	6.9	0.03	53.9
Bangladesh	60.8	2.5	4.6
Cambodia	20.9	0.6	n.a.
China	13.3	1.2	42.8
Fiji	10.9	4.6	9.4
India	54.5	2.66	3.8
Indonesia	9.9	7.2	6.5
Japan	10.4	1	1.7
Republic of Korea	17.5	2	0.9
LaoPDR	3.5	0.22	n.d. ^c
Malaysia	5.5	17.6	0.8
Mongolia	0.8	–	74.7
Nepal	20.3	0.5	12.2
New Zealand	5.8	6.4	50.5
Pakistan	27.3	0.73	6.4
Papua New Guinea	0.13	1.35	n.a.
Philippines	17.2	14.7	4.2
Sri Lanka	13.4	15.8	6.8
Thailand	33.4	6.6	1.5
Viet Nam	17.4	4.7	1.5
World	10.6	1	n.a.

Sources: ^a FAOSTAT, 1999; ^b FAOSTAT, 1997; ^c no data.

Agricultural productivity and new risks

Agricultural production in the countries of Asia has grown the fastest in the world, at an average of 3.2 per cent per year during 1982-92 and continuing for many countries, although, as Table 3 shows, this growth is stabilizing in later years for the majority. Growth is partially due to technical changes, such as increased area of land under irrigation and use of tractors and fertilizers, all of which are indicators of agricultural efficiency and reflect the degree of investment in agricultural improvement.

Asia has the greatest share of arable land under irrigation in the world, an average of 37 per cent, but reaching 80 per cent in Pakistan. Even in damper climates irrigation can be important, such as in Japan where 61 per cent of the arable land is irrigated. At 5.3 per cent per year, it also has the fastest growth in fertilizer consumption. Such advances have allowed Asia to almost triple its yields of staple crops from 1.1 tonne per hectare to 3 tonnes per hectare since the early 1950s. Part of this trend, one which is a feature of Asian agricultural productivity, is the so-called "Green Revolution",

where new varieties of crops for enhanced production have boosted incomes of poor farmers and the landless. A survey in southern India, for example, showed that between 1973 and 1994 the average real income of small farmers increased by 90 per cent and that of the landless by 125 per cent. Calorie intakes for small farmers and the landless rose from 58 to 81 per cent and protein intakes from 103 to 115 per cent. But these new high-yielding crops also have their down side: their demand for labour-intensive cultivating techniques and thirst for water and agrochemicals in the form of fertilizers and pesticides expose agricultural workers to new hazards.

Agrochemicals

The use of pesticides is increasingly a regular feature of agricultural work. They are, by definition, poisons which are used to destroy or control unwanted organisms, usually species which otherwise might cause severe economic losses to crops or be responsible for the transmission of disease. Since they are biocides, they are intrinsically potentially dangerous to other

Table 3. Agricultural productivity and efficiency

	Average annual growth agriculture value added (per cent) ^a		Number of tractors per 10 km ²	Fertilizer use (1 000 metric tonnes) ^c		Irrigated land (as percentage of arable land)	
	1980-90	1990-98		1988 ^b	1987	1997	1979-81 ^a
Australia	3.3	1.1	0.7	1 349	2 260	3.5	5.1
Bangladesh	2.7	1.5	0.5	706	1 072	17.1	44.8
Cambodia	n.d. ^d	2.2	n.d.	6	8	4.9	7.1
China	5.9	4.3	2.0	22 687	35 988	45.1	38.3
Fiji	n.d.	n.d.	n.d.	21.5	19	1.4	1.1
India	3.1	3.4	3.9	8 822	16 195	22.8	33.5
Indonesia	3.4	2.8	0.4	2 265	2 463	16.2	15.5
Japan	1.3	-2	365.5	2 037	1 510	62.6	62.9
Republic of Korea	2.8	2.1	8.9	840	906	59.6	60.5
LaosPDR	3.4	4.5	n.d.	0.5	3.5	15.4	19.2
Malaysia	3.8	2	2.7	699	1 200	6.7	4.5
Mongolia	1.4	1.9	0.1	24	2	3	6.4
Nepal	4	2.3	0.7	54	109	22.5	38.2
New Zealand	3.8	2.2	5.6	370	691	5.2	8.7
Pakistan	4.3	3.8	6.8	1 720	2 659	n.d.	81.4
Papua New Guinea	1.8	4.1	n.d.	14.7	13	n.d.	n.d.
Philippines	1	1.5	2.2	486	810	14	16.3
Sri Lanka	2.2	1.5	12.3	206	210	28.3	31.8
Thailand	3.9	3.1	6.5	587	1 478	16.4	24.5
Viet Nam	n.d.	n.d.	5.3	421	1 571	24.1	31.9
World	2.7	1.2	n.d.	139 589	137 254	17.8	18.8

Sources: ^a World Bank, 1999; ^b *The Economist*, 1991; ^c FAOSTAT, 1999; ^d no data.

species, including humans. It is therefore not surprising that these and other agrochemicals constitute one of the major occupational risks causing poisonings and deaths and, in certain cases, work-related cancers.

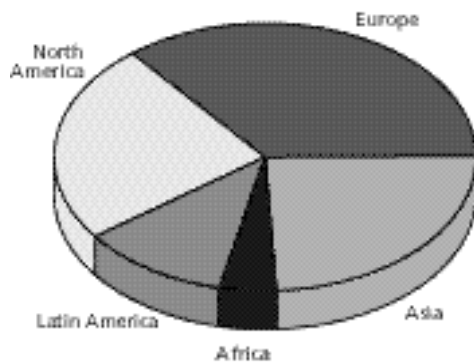
Thousands of deaths every year from pesticides

Pesticide-related illnesses both in developed and in developing countries are notoriously under-reported, but the ILO estimates that as much as 14 per cent of all occupational injuries and 10 per cent of fatalities in the agricultural sector are due to exposure to pesticides. This would put the figure for pesticide-related deaths for agricultural workers at about 17,000 per year. While developing countries consume about 20 per cent of the world production of pesticides, they are home to about 70 per cent of the total number of acute poisonings, or more than 1.1 million cases per year. The World Health Organization, on the other hand, places the total cases of pesticide poisoning at between 2 and 5 million per year, of which 40,000 are fatal (see Table 4).

China and India first for pesticide poisonings

The countries of Asia, including Japan and Australia, consume about 24 per cent of the world's production of pesticides (see Figure 2). But, because the region has the main concentration of agricultural workers, it follows that in numerical terms the majority of the world's pesticide poisonings will be found in the developing countries of Asia, and in particular in China and India (see Table 4).

Figure 2. Pesticide use by region



Source: UNIDO, 1993.

The magnitude of occupational and environmental health risks associated with exposure to pesticides will vary according to the type of pesticide used, quantities and use patterns e.g. type of crop cultivated and the mode of application, special groups at risk and climatic conditions.

The majority of pesticide operations are directed at the control of insects, weeds and plant pathogens, with the result that the main classes in use today are insecticides, herbicides and fungicides. Whatever its class, hardly any pesticide will ever be sufficiently specific in its action to exclude damage to species other than the target. Herbicides are among the most specific, while most insecticides can rarely distinguish between target pests, beneficial insects, large mammals and even humans. Fungicides generally lie between the two.

Pathogens and insects thrive in the tropics

Different countries will show different characteristics in terms of their consumption of specific types of pesticides. Hence developing countries, especially those with tropical or subtropical climates which favour the build-up of pathogens and insects harmful to agricultural and plantation crops, are big users of insecticides, generally the most harmful pesticides to humans. The highly developed agricultural industries of Japan and Australia, on the other hand, are big users of herbicides as part of their efforts to increase crop yields. Japan and Korea stand out in the region for their use of fungicides, probably due to the more humid climates in these countries which is often associated with plant disease.

While the use of pesticides in developing countries is much less than in industrialized countries, it is expected to increase in the former at a faster rate. Pesticide sales increased by 28 per cent over the 1990s in these countries. Furthermore, it is expected that insecticides will continue to represent by far the greatest proportion of pesticide class used in some countries of Asia.

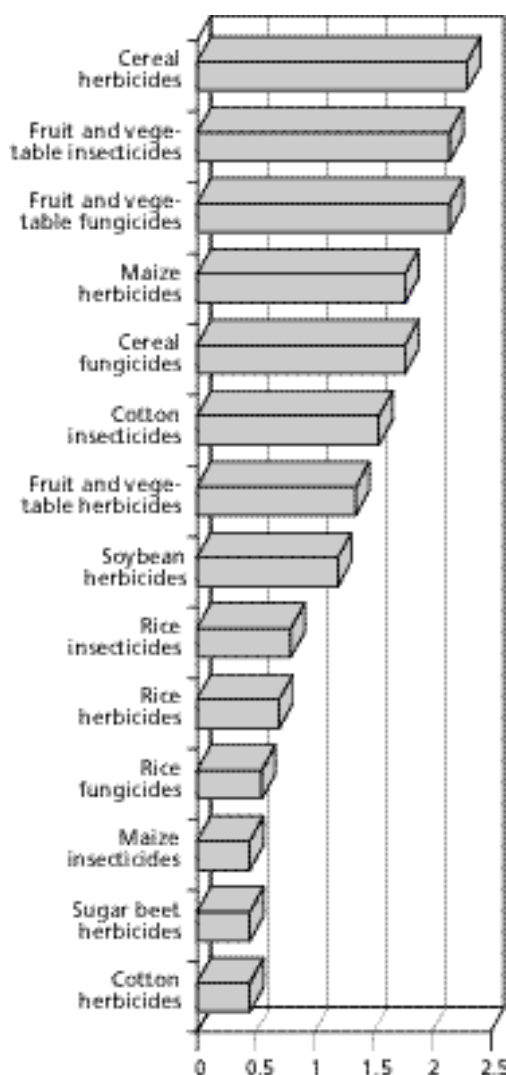
Another factor which influences the extent of use of certain pesticides is the type of crop they are supposed to protect. Cash crops, especially plantation crops, form the main market for pesticides in developing countries; chemicals are being increasingly used in subsistence-type agriculture where the potential for worker and public exposure may be greater due to a relative ignorance of the effects and a lack of

Table 4. Regional use of pesticides by class, percentage of the market share, 1990

	Herbicides	Fungicides	Insecticides
North America	33	28	18
Europe	35	52	29
Asia	15	6	30
Latin America	9	7	9
Rest of world	8	7	14

Source: UNIDO, *Industry and Development Global Report* 1993.

Figure 3. Main crop and pesticide combinations, billions US\$, 1990



Source: UNIDO, 1993.

protection. In terms of market value, most pesticides are aimed at only about ten major crops in the world – maize, wheat, rice, cotton, soybean, sugar beet, vines, general fruit and vegetables (see Figure 3).

In monetary terms, fruit and vegetables rank as the number one pesticides-demanding crop. From an environmental point of view, however, the amount of pesticide used per unit harvest crop per area (the use index) may be more relevant. In this case, cotton ranks as number one as it consumes twice as much pesticide as soybean and eight times as much as wheat.

It is therefore very important in terms of potential health and environmental impact to know what sort of pesticide is used where and on what sort of crop. Since it is known that fruit and vegetables consume most pesticides it follows that the countries of Asia and the Pacific will be major users, as they account for about 45 per cent of world vegetable production. Vegetable production is dominated by China, which alone produces over a quarter of the world's vegetables, and by India, which is the second biggest producer of vegetables, although less than half that of China. Asia also accounts for about 25 per cent of fruit production, with India being the third biggest fruit producer in the world (after Brazil and United States). The region also accounts for almost half of cereal production, dominated again by China, India and the rice-growing countries of South and East Asia.

Rice in Japan, more than half of total pesticides

Wide discrepancies can exist among countries in the use of pesticides for specific crops. For example, while Japan accounts for only 1 per cent of the world's planted area for rice production, it uses more than half of total world use of herbicides and fungicides and nearly half of the world's use of insecticides for this crop.

The extent of health effects from pesticide exposures will also depend to a large degree on the toxicity of a particular pesticide in use in any area. Discounting the naturally occurring pesticidal chemicals, bacterial and other organism biocides (which represent only a minor share of pesticide use), most pesticides belong to only four major groups which dominate the market: organochlorines, organophosphates, carbamates and pyrethroids.

The four major groups

Organochlorines

These were the first synthetic organic pesticides to be developed, in the 1940s. They act by interfering with normal functioning of the nervous system. Examples include aldrin, dieldrin, endrin, chlordane, DDT, HCH, endosulfan, heptachlor and methoxychlor. They are less widely used now, mainly because many insect species have developed resistance to them, because their persistence in the environment has made them unacceptable, and also because they are stored in the fatty tissues of humans and other species and can therefore bioaccumulate in the food chain. These last two factors have led to severe restrictions and even bans on their use in some countries. But these measures have not stopped their use in some developing countries, mainly because of their cheap price, indigenous availability, "dumping" by industrialized countries, and, ironically, their broad spectrum of activity and long-term efficacy. Just ten years ago, DDT still accounted for 70 per cent of all pesticide use in India, even though it has been banned, restricted or withdrawn from sale in more than 40 countries of the world.

Organophosphates

Concern for the environmental effects of organochlorines led to a shift towards less environmentally persistent organophosphate pesticides. These compounds are not stored in the body, but their effects can accumulate. Early organophosphates, such as parathion, tended to have similar properties to the early nerve gases developed for warfare and so were extremely toxic to mammals and humans. Later developments produced organophosphates with lower toxicity for humans. Common examples include malathion, dichlorvos, diazinon, fenitrothion, bromophos, temephos, etc.

Carbamates

These pesticides act in a similar way to organophosphates but are not stored in fatty tissue and show no accumulation of effect. Examples include aldicarb, methomyl, propoxur, bendiocarb, carbaryl and fenitrothion.

Pyrethroids

This class of pesticide was developed from the naturally occurring pyrethrins. Both pyrethrum and the synthetic pyrethroids are attractive in that they are relatively non-persistent in the environment and relatively non-toxic to mammals. This relative safety, together with outstanding insecticidal activity, has led to the pyrethroids becoming the most rapidly expanding of all insecticide classes. Examples include bioallethrin, cyhalothrin, cypermethrin, fenvalerate, permethrin, resmethrin and bioresmethrin.

If occupational and environmental health problems are directly related to the amounts and types of pesticides used, then all these factors may be taken as indicators of the extent of future problems unless measures are taken to avoid or reduce both pesticide use and particularly use of the more toxic varieties.

Pesticide stocks

A particular health and environment problem in many developing countries is the large stock of obsolete and highly toxic pesticides, much of it donated through foreign aid programmes. The Food and Agriculture Organization (FAO) estimates that several countries in Asia have stocks in excess of 5,000 tonnes each, some of which may be over 30 years old. Due to the absence of efficient and environmentally-sound disposal facilities, notably high-temperature incinerators, stocks are constantly increasing.

In many countries pesticide containers are kept in the open where they deteriorate and leak their contents into the soil and water. Some such pesticides, says the FAO, are so toxic that a few grams could poison thousands of people or contaminate a large area.

Donor countries, aid agencies, agrochemical companies and recipient governments are all responsible for the steady accumulation of obsolete pesticides in developing countries. The long-term solution to costly disposal problems (disposal costs vary from US\$3,500 to US\$5,000 per tonne) lies in preventing accumulation in

the first place by keeping stocks as small as possible and by drastic reduction of pesticide use.

The extent of individual exposure to pesticides

Individuals can be exposed to pesticides in several ways – through handling the chemicals at work, through mixing and/or application, by being in or near the area where pesticides are applied, by drinking or eating contaminated produce, etc. To be able to reduce exposure, therefore, several factors have to be taken into account.

Ways to reduce exposure

Formulations

A great many formulations of pesticides exist – sprays, fogs, mists, dusts, baits, concentrates, granules, etc. Sprays, fogs, mists and dusts are much less easy to contain and risk contaminating a wide area and exposing more people to direct and indirect hazards. This risk can be reduced to some extent by the use of granular formulations, and even more so by the use of planting machinery that can bury the granules into the seed furrow.

Application equipment

Just as there are different formulations there are also different methods of application of pesticides that can greatly influence the extent of exposure. Obviously, the implantation of pellets or granules can be highly targeted, as well as relatively risk-free to the operator; but in the vast majority of agricultural practices pesticides are applied in spray form, either from the air, or from the ground by tractor-mounted machinery or by individual workers using a knapsack sprayer. Contamination is much more likely by these techniques.

If crops are sprayed by hand, as is the case in the vast majority of agricultural workplaces in the developing countries of Asia, then the risk to operators is considerable. This is made worse by the fact that the technology used to spray pesticides in many countries reflects technical standards of over 40 years ago. In addition, much of the spraying equipment is in extremely poor condition and many farmers still believe in “high volumes, high pressure and high doses” as the most appropriate way to apply pesticides.

Not complying with quality standards

The FAO published a press release in 1997 highlighting, among other things, the state of affairs concerning pesticide spraying techniques in Asia. The organization estimated that in Pakistan about 50 per cent of applied pesticides are wasted due to poor spraying machinery and inappropriate application. In India, high levels of pesticide residues in food crops, compared to the world average, are reported – an indication of inappropriate application. Although India has national standards governing spray equipment, there are still many small manufacturers serving local needs who do not comply with quality standards.

No legislation, standards or training

The FAO also quoted a study in Indonesia that showed that 58 per cent of manual spraying equipment leaked. In Malaysia, a lack of training, improper maintenance of spraying equipment and insufficient protective clothing all contribute to pesticide poisoning among spray operators as well as excessive pesticide residues in water. A report on Viet Nam said that the supply of safe spraying equipment was limited, mainly due both to the absence of national legislation and standards and a lack of training of operators.

Economic and cultural background

The technology allowing safer and more efficient use of pesticides exists today but its application depends on the technical capacity and the economic and cultural background of a country. To improve application and reduce exposures to pesticides, it will therefore be necessary to introduce good, standard quality spray equipment, education of farmers and operator training.

If crops are sprayed from the air, by helicopter- or airplane-mounted sprayers, the risk to operators may be less, but environmental and public contamination will be considerably higher. Aerial spraying creates spray drift which may affect very large areas and whole communities. Depending on the height above the ground at which spraying is carried out, turbulence, wind speed, etc., often less than one-half of the applied spray falls inside the target field.

Special groups at risk

If all the above factors determine the potential extent of exposure to occupational and environmental health hazards in the agricultural community, then the actual impact will be felt most on certain groups. The most vulnerable groups are found among the rural poor, in family subsistence agriculture, in plantations as daily paid labourers, seasonal or migrant workers without land, women and child labourers (see Table 5).

The rural poor

One of the distinguishing features of agricultural work is that it is carried out in an essentially rural environment where working and living conditions are interwoven and environmental factors play a determining role. Environmental pollution from pesticides causes public health hazards to workers' families and their communities as well as to the workers themselves, and to farm animals. In developing countries in particular, a large number of rural workers live in extremely primitive conditions, often isolated, without adequate food, water supply and sanitation systems, or access to health services. These rural communities often lack the education and information needed to do something about the health hazards they face.

Casual and migrant workers

Temporary work in agriculture is characterized by casual forms of labour, precarious working conditions and little or no social protection. It must be remembered that the bulk of

wage employment in agriculture in Asia is generally of a daily, occasional or seasonal nature. Such wage labourers may be either fully landless or from smallholding peasant households. Temporary workers may be more exposed to "dirty" operations than are other agricultural workers, and have less training to carry out tasks. Migrant workers may also have language and cultural difficulties at work and in their daily lives that make them ill-equipped to help prevent exposures to occupational hazards in the first place and to receive effective treatment in the second. Mobile and seasonal workers may suffer from multiple chemical exposures that accumulate from different workplaces.

Women

In Asia, over 80 per cent of the workforce in agriculture is made up of women. Doubly burdened by their family responsibilities and their agricultural work, women's work loads are indeed heavy. Furthermore, their incomes remain low as they depend on the sale of primary products, the prices of which are out of their control.

Twice as many women now

A significant change in the past few years has been the number of women in the waged agricultural workforce. In the Asia and Pacific region, their presence has doubled since 1980 to nearly 45 per cent of the waged employment in the sector. Globally, this figure is about 20 per cent. However, such work is more often than not seasonal, with all the attendant increased risk of exposure to pesticides and machinery.

Table 5. Occupational status of the agricultural population in selected countries (percentage)

Country	Employees and own-account workers	Wage workers	Unpaid family workers
Bangladesh	38.6	39.1	21.9
Fiji	59.5	4.5	35.7
Indonesia	48	12	40
Japan	49.1	11.5	39.9
Republic of Korea	58.4	6.9	34.6
Malaysia	46.3	27.5	26.1
New Zealand	37.1	57.6	5.2
Pakistan	53.9	9.5	36.5
Philippines	51.8	20.2	27.9
Sri Lanka	34.6	43.7	21.5
Thailand	34.1	9	56.8

Source: ILO. 1996. *Wage workers in agriculture. Conditions of employment and work*, Geneva.

The health impact of pesticides may also be greater on women for a variety of reasons: their greater burden of body fat in which certain pesticides have a tendency to accumulate, their reproductive capacity, and, if exposed during pregnancy, the risk of effects on the unborn child. Women may also be more susceptible to the effects of pesticides due to malnutrition and to exhaustion.

Child labour

Child labour is pervasive in agriculture, both in smallholdings and in large commercial farms. In spite of improvements and national laws that prohibit child labour being adopted in a number of countries, the problem persists both as a result and as a manifestation of poverty, especially in the agricultural sector.

Data on the prevalence of child labour in agriculture are few, but recent ILO surveys suggest that there are at least 120 million children between the ages of five and 14 who are fully at work, and about 250 million if those for whom work is a secondary activity are included. Of these, 61 per cent are to be found in Asia, that is, over 152 million children, of whom 73 million are fully at work (see Table 6).

A far higher percentage of child labourers are rural rather than urban children, and agriculture accounts for 77 per cent of all cases of economically active children under the age of 15. In Bangladesh, for example, fully 82 per cent of the country's 6.1 million economically active children work in agriculture. It is also a sector where children comprise a significant part of the total labour force, close to one-third of the

agricultural workforce in some developing countries. These rural children are more likely to start work earlier (at 5, 6 or 7 years old) and work longer days and hours than urban child labourers. Girls are particularly likely to start work earlier and be denied access to education in the process.

A modern form of slavery

Many children have been, and are, active in agriculture from an early age as part of family life, helping out their parents in the fields and with various chores. Many, often as young as seven or eight, work for a wage or as part of a family team on large-scale enterprises producing for export. Often they are not formally hired although they work piece-rate or on quota systems.

Large numbers of children are forced to work in the agricultural sector, and farming may account for more forced child labour than does manufacturing. Debt bondage, at its most common in rural areas in South Asia, is a modern form of slavery whereby a person offers their labour, or that of a child, in return for a money advance or credit. Sometimes only the child is pledged, becoming a commodity in what can only be one of the worst processes of child exploitation.

Young children routinely exposed

But whatever the form of exploitation, many working children face significant threats to their health and safety, even on small family farms which produce much or most of the agricultural produce of a country. Small farms are as likely to misuse chemicals as are larger commercial enterprises. According to data from Sri Lanka, child deaths from pesticide poisoning on farms and plantations are greater than from childhood diseases such as malaria and tetanus. Even if not actually working, babies and very young children are routinely exposed to the threat of pesticides as they accompany their mothers in the field. No country can afford to keep sending its children to work rather than to school, and no family, if not out of economic necessity, would want to see its children suffer in the fields from an early age. Greater commitment on the part of governments, employers and trade unions is required to address the issue of child labour in agriculture.

Table 6. 10-14-year-olds at work (per cent of total age group)

Country	10-14 year-olds at work (per cent of total age group)
Bangladesh	30.12
China	11.55
India	14.37
Indonesia	9.55
Japan	0
Republic of Korea	0
Malaysia	3.16
Nepal	45.18
Pakistan	17.67
Philippines	8.04
Thailand	16.22

Understanding the economics of child labour

The traditional response to the problem has been to improve legislation, but more often than not in developing regions, effective legal protection does not extend beyond urban areas and the formal sector. Protecting children on smallholdings must therefore rely on other measures such as community education about the alternatives to child work, in particular the importance of education. Schooling for the poor, especially girls, is the single most effective way to stem the flow of children into exploitative agricultural work. A better understanding of the economics of child labour in agriculture would assist in the design of better policies and initiatives to reduce the hazards related to child labour and thereby towards the elimination of such forms of employment.

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Prevention must be the guiding principle with respect to accidents and occupational diseases: Workers must be informed as to hazards and be trained to incorporate preventive measures into the performance of their activities

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Latin America is a vast region of the American continent divided into two geographical areas, namely Central America (Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua and Panama) plus Mexico, and South America (Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Guyana, Paraguay, Peru, Uruguay and Venezuela).

Its total area is over two million hectares, more than 8 per cent of which is used for farming in the normal course. This percentage varies according to the country, ranging from 2 per cent (Bolivia, Guyana) to 36 per cent (El Salvador).

Its population was 465 million in 1998, or 8 per cent of the world's population. That proportion will remain constant until 2010 at a world population growth rate of 13.1 per cent and should be sustained by economic development and increased food production.

Economic trends

The world's economically active population is 2,865 million, 1,307 million of which are engaged in agriculture (FAOSTAT, 1999). Their proportion of the overall workforce is declining slowly as a result of an estimated 0.6 per cent slowdown in growth between 1900 and 2000, and a projected 0.4 per cent between 2000 and 2010 (ILO, 1996). Yet their absolute number continues to grow, as does the land area under cultivation.

Increases in many export prices

Broadly speaking, economic growth in developing countries has been influenced by both external and domestic factors. The external factors have been the economic upturn in

industrialized countries that has made for a large influx of capital, the liberalization of international trade and the increases in a range of export prices (FAO, 1996). The domestic factors have been socio-political and macroeconomic stabilization, a diminished government role in the economy and the opening up of foreign trade. These changes have made it possible to import goods that boost not only productivity but also investment in education to foster efficiency and technological development.

Forging strategic alliances

The globalization of markets based on increased international trade and more modern means of communication has led to financial and political interdependence among nations. The corollary to the new distribution of power has been the formation of strategic alliances in order to create regional protection mechanisms such as the Central American Common Market, the Southern Common Market (MERCOSUR), the North American Free Trade Agreement (NAFTA) and the Andean Pact.

Deterioration of the situation of workers

Yet agriculture is feeling the effects of these changes, like all the other sectors with less pronounced technological development and where the results of production are less predictable and entail a low return per unit. Owing to international competition, prices are set by the lowest bidder, which ultimately deregulates the labour market. The consequence is the deterioration of the political and economic situation of workers, as well as their occupational

health and safety. The free trade agreements framed by economic parameters have led to:

- flexibility in the world of work, with a high degree of geographical worker mobility, changing methods of production, the conclusion of precarious contracts and the individualization of labour relations favoured by the intervention of employment agents (Bronstein, 1997);
- the technological restructuring of agricultural enterprises to speed up growth;
- competition based on maximum profitability, the elimination of subsidies and labour specialization, leading to the demise of small and medium-sized enterprises and the preponderance of the *latifundios*¹.

Agricultural production

The early 1990s witnessed the stagnation of per capita world agricultural output and the worsening of the world food deficit; the number of countries in difficulty rose from 15 in 1994 to 29 in 1997 (FAO, 1996), over half of them being in Africa.

In spite of this stagnation, the countries of Latin America maintained a level of production in excess of population growth, though being heavily dependent on farm exports, their production was oriented towards the external market, which determines what is grown and its sale price. The 1990s policy of diversification designed to foster export products with higher income and price elasticity (ornamental plants, pineapples) than traditional products did not succeed in all the countries.

The world's poorest are agricultural workers

In Latin America, the population engaged in farming is largely rural. The concentration of land and mechanization, compounded by globalization, have quickened the impoverishment of this population and its exodus towards urban fringes where it is increasing the already swollen ranks of the jobless and exacerbating living conditions (see Figure 1).

Generally speaking, most of the world's poor are farm workers (ILO, 1990). The FAO and the Economic Commission for Latin America and the Caribbean (ECLAC) have demonstrated that between 1980 and 1990, the region's total indigent population grew by 60 million and, even if the phenomenon is essentially an urban one, its impact and severity are still greater in rural areas (World Bank, 1980, 1982).

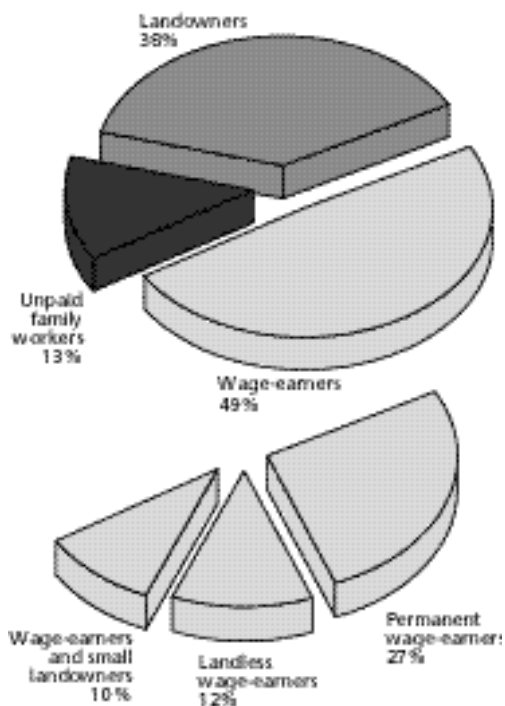
Limited access to services

The living and working conditions of the agricultural population are closely interrelated. The isolation of places of residence limits access to most services in particular, to drinking water, public cleansing facilities, public transport, health services, and technical orientation services, among others. The unhealthiness of the surroundings is affecting not only small properties but also large enterprises owing to the employment of casual labour and migrants, often without legal, social and trade union coverage (Vanackere, 1988; Forastieri, 1997).

Women, the elderly and children

Because of the migration of young men towards the cities, agricultural work is falling increasingly upon women, the elderly and chil-

Figure 1. Distribution of agricultural workers by category in Central America



Source: ILO: Project RLA/93/MO3/DAN – Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, Panama (unpublished document, Geneva, 1998).

Quoted in: ILO, 1999, *Safety and health in agriculture*, Report VI(I) to the International Labour Conference, 88th Session (2000), Geneva, 1999.

dren. Their access to training and information as to the risks involved is practically non-existent and they suffer the worst consequences of poor working conditions. Women already make up 40 per cent of the sector's workforce and, of the 15 million children on the job market in Latin America and the Caribbean, 56 per cent are already in the agricultural sector between the ages of 5 and 7 years of age (ILO, 1996a; Forastieri, 1997). In 1989, 20 to 25 per cent of Brazil's rural workers were under 18 years of age (ECLAC, 1993) and the proportion of those under 10 was significant (ILO/IPEC, 1997a). Again in Brazil, 28,000 children were working in the production of coal, sugar cane and sisal at the close of 1997 (ILO/IPEC, 1997b).

Land sales, insufficient wages and worsening poverty

The departure of the men is leading to a slowdown in the technological and commercial changes appropriate to the present economic setting and to a loss of competitiveness. The result is increased sales of land, joblessness, migration, casual work, falling productivity, insufficient wages and the intensification of poverty.

The social and economic status of farm workers in Latin America is yet another complicating element in characterizing contractual relations within this population group (FAO, 1996). They may be permanent employees, independent owners, small owners with temporary activities on other properties, unpaid family members or even temporary workers from other regions or neighbouring countries. There are varying perceptions of the difficulties encountered and this has produced wide-ranging attitudes to change.

Discrimination against Indian and mixed-race populations

Casual workers make up more than one third of the workforce in Guatemala and Mexico, one fifth in Honduras and one quarter in Panama (FAO, 1996). In Brazil, women represented 33 per cent of the total in 1989. They represented 80 per cent of fruit-harvesters in Chile (52 per cent of women), and 32.1 per cent of agricultural workers in Ecuador (Gomez; Klein, 1993).

Besides, there is the problem of the Indian and mixed-race populations, who are subject to severe political, social and economic discrimination. They are sometimes small proprietors,

but are most often landless workers (over 50 per cent of rural dwellers in Guatemala, 65 per cent of coffee producers in Mexico) (see Figure 2).

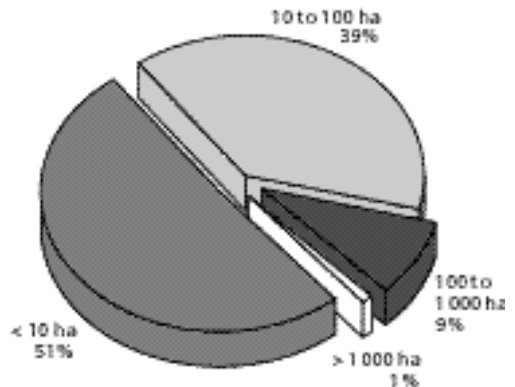
Training restricted to a few isolated problems

Broadly speaking, there is a virtual absence of vocational training. Perception of occupational hazards is insufficient if not non-existent. Training and information programmes are organized by the Ministries of Labour and Health in some countries, in cooperation with other national or international bodies, but these cover mostly technical staff and labour inspectors. They rarely reach workers and small proprietors. Moreover, the local nature and limited content of these courses make it possible to solve only isolated problems, without inducing durable changes of behaviour or work methods.

Working conditions

In addition to crop-related activities such as soil preparation, sowing, the tending of plants, the handling of pesticides and fertilizers, harvesting and clearing of fields, working the land requires activities in support of these processes and of the habitat in general, such as new land clearance, building of access roads and irrigation systems, the construction and maintenance of buildings, work in silos, the upkeep of implements and machinery, livestock farming, etc. The properties are mostly small farms (between 45 and 90 per cent of the cultivable area depending on the country), but may also be in excess

Figure 2. Distribution of farms in Brazil, by size and level of technology used



Source: Garcia and Almeida, 1991.

of 1,000 hectares (*latifundios*)¹. The bigger the area, the greater the likelihood that it will be used for livestock rearing, with a large portion of the land lying fallow.

Increased risks in relation to the complexity of work methods

Widely varying levels of technology are used depending on the size of properties, the plant species concerned and the financial resources available to farmers. The health hazards increase in parallel with the complexity of work methods.

The mode of production determines the type of farming: whether subsistence or commercial, on small plots or large-scale, with crop rotation or intensive farming. The work is seasonal and involves long working days and phases of highly intense activity. Subsistence farming relies on traditional techniques and grows a range of plant products on small plots of land, while small and medium-sized commercial farms invest in mechanization and also practice crop variety and rotation involving a smaller selection of agricultural products. The big farms engage in the intensive cultivation of a single crop on large areas. The reduced variety of plant species and the absence of crop rotation together with the use of larger areas have the effect of depleting the soil of the necessary nutritive elements and reducing the self-regulation of biological species. The net result is the need for mechanization, the large-scale use of fertilizers and the systematic chemical treatment of crops.

Legislation on agricultural work

Laws governing agricultural work vary from country to country in Latin America: a general labour code based on the practices and needs of the industry is used in Brazil and Venezuela, establishing rules on the use of pesticides and agricultural machinery. In Colombia, Costa Rica, Honduras and Mexico, the general law contains some sector-specific provisions (Alvarez, 1990). Only in Argentina is there a specific law on the matter: Law 22.248 on the agricultural labour regime governs the health and safety conditions of workplaces, machinery and implements. It prescribes that prevention must be the guiding principle with respect to accidents and occupational diseases, that workers must be informed as to occupational hazards and that they must be trained to incorporate preventive measures into the performance of their activities.

One of the three most dangerous sectors

Owing to ignorance and the shortcomings if not the total absence of adequate legislation, labour relations are based only on a few collective agreements. The result of this lack of social protection combined with non-existent inspection is that confrontation and violence are still one way of settling labour disputes.

The hazards of agricultural work

Farming is classified among the world's three most dangerous production sectors. Despite the small proportion of workers employed in the sector in the United States, (2.7 per cent of the workforce), it recorded the second highest death rate from occupational accidents and the third highest incidence of occupational injuries in 1995 and 1996 (National Safety Council, 1996, 1997). This covers all categories of farms and, even if workers on larger properties have greater access to information, protective equipment and health services, the frequency and intensity of their exposure to risks are also higher.

Over 200,000 deaths per year worldwide

The ILO receives some 2,200 declarations of fatal or non-fatal industrial accidents in agriculture annually (ILO, 1996). Based on the mortality rate in the United States and the industrialized countries of Europe where working conditions are better and there are good systems of diagnosis and registration, it is possible to calculate that the worldwide occupational mortality rate must be in the region of 200,000 cases per year.

Casual workers the chief victims

The world labour accident rate showed an upward curve during the latter part of the past decade (Proteção, 1990). Workers are exposed to hazards directly related to their activities and to environmental risks (storms, ultra-violet radiation, poisonous animals and plant allergies), and the chief victims are casual workers who are given the most perilous working conditions and who have the least training in prevention.

Under-reporting of minor accidents

By order of frequency, the most often reported causes of accidents are those involving cutting and piercing instruments, tractors and their accessories and chemical products (National Safety Council, 1997). Nevertheless, as a result of the well-known practice of under-reporting minor accidents involving tools and machines, pesticides, falls, slips and so many other risk factors, the statistics available even in developed countries are far below the actual incidence, and there is no way of estimating the proportion of unreported cases (see Table 1).

Furthermore, in addition to changes in living and working conditions, changes in national classifications and the quality of notification systems can significantly affect the figures disclosed. This is evident from the statistics on Ecuador where the number of accidents rose 181 per cent between 1985 and 1990, while in Panama and Brazil, where no noteworthy measures were taken, the figures fell by about 25 per cent over the same period (Gomez; Klein, 1993).

Virtually non-existent reporting

Despite the significance and seriousness of subacute chronic intoxication by pesticides, muscular and skeletal ailments, allergic conditions, dermatoses, neoplasia, zoonoses, etc., reporting of occupational diseases is almost non-existent in Latin America. The available sta-

tistics most often emerge from targeted studies and cannot be extrapolated to the entire country or even the region. Moreover, malnutrition, unsafe health conditions and intercurrent diseases compound the risk of occupational diseases, and the simultaneous occurrence of occupational and non-occupational diseases even further complicates the task of diagnosis for physicians who are not alive to these problems.

Less than half of workers covered by insurance

The gravity of the situation can sometimes be gauged indirectly:

- "Rural Brazil does not count its injured", but the compensation figures recorded for 1989 by the Social Security Service show 199 pensions paid to dependants following cases of death; 436 retirements on account of invalidity, and 96,104 payments owing to occupational diseases. It must nonetheless be recalled that the insurance system covers a mere 45 per cent of workers (Proteção, 1990);
- imports of pesticides into Central America rose almost 100 per cent during the 1980s to 53.6 million kg per year. In Costa Rica, over the same period, the figure was 4 kg of pesticides used per year and *per capita*, or eight times the average calculated for the world population and twice the estimated figure for the entire region (Wesseling; Castillo, 1992).

Table 1. Mortality rate from industrial accidents in agriculture in Latin America

Country	Mortality rate in agriculture		Number of declared accidents	
Argentina *	(07/96 - 06/97)	0.443/1 000 insured workers	(07/96 - 06/97)	16 861
Bolivia	(1995)	0.000/1 000 insured persons	(1995)	2
Chile	-		(1985)	6 015
Colombia	(1995)	0.084 /1 000 insured persons	(1995)	3 098
Costa Rica	(1995)	0.450/1 000 insured persons	(1995)	45 442
Ecuador	-		(1994)	157
El Salvador	(1992)	0.270/1 000 insured workers	(1995)	498
Guatemala	(1990)	0.230/1 000 insured persons	(1992)	34 480
Guyana	-		(1995)	3 717
Honduras	-		(1992)	3 655
Mexico	(1989)	1.400/1 000 insured workers	(1995)	16 088
Nicaragua	(1991)	0.688/1 000 insured persons	(1996)	324
Panama	-		(1996)	3 769
Peru	(1990)	0.008/1 000 insured persons	(1990)	594
Venezuela	-		(1994)	582

Source: ILO, 1997. *Bulletin des Statistiques du Travail*, Geneva.

* Superintendencia de Riesgos del Trabajo, Min. de Trabajo y Seguridad Social, Buenos Aires, 1997.

Indigenous rural workers in Latin America

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There is a category of workers who often face even greater problems than those commonly encountered by rural workers: these are indigenous rural workers.

In many countries in Latin America the living and working conditions of these workers and their families are below the average for workers belonging to what is referred to as the predominant society, including non-indigenous rural workers. These differences are evident in access to education, social security, levels of trade union membership, salaries and in occupational health and safety. In recent years, these differences have also been reflected in land distribution under agrarian reform programmes.

One aspect of ILO policy towards agricultural workers consists of extending to them some elements of the social protection enjoyed by workers in industry.¹ Nevertheless, indigenous rural workers of both sexes are most often without minimum social protection and at greater disadvantages than non-indigenous rural workers of either sex. Access to education for these workers and their families is often limited by the lack of suitable teaching methods that take account of cultural factors such as the languages and beliefs of these peoples and which meet their specific needs.

In general, the conditions of health protection of indigenous peoples are more precarious than the average for the population. Hence, for example, in connection with Mexico's application of the Indigenous and Tribal Peoples Convention 1989 (No. 169), the ILO Committee of Experts on the Application of Standards and Recommendations spoke of the health hazards facing indigenous workers on the tobacco plantations in Nayarit State owing to the intensive and indiscriminate use of toxic pesticides.² Instances have been identified in Paraguay in which indigenous workers have died for lack of access to minimum health services on the estates where they worked or because they were unable to afford such health care. Social security coverage for these workers is therefore very limited, as in some countries a formal work contract must be concluded with the employer in order to gain access to it.

Although the Conventions on freedom of association guarantee all workers the right to set up such organizations as they may deem appropriate, rural workers in a good many countries face *de facto* and *de jure* obstacles to becoming unionized. The situation is even more critical for indigenous workers, who are

often denied the legal capacity to set up or join such organizations. In most countries in Latin America with indigenous populations, trade union organizations of indigenous extraction are all but non-existent. The Committee of Experts took note of some allegations concerning the situation of indigenous day labourers in Mexico who "only have access to trade unions which have shown no concern for their precarious situation, while independent organizations that have started to organize agricultural workers have been systematically denied the right to register."

In some countries, indigenous rural workers are viewed by other workers as competitors in the struggle for land, as some laws grant them certain rights over land that they had traditionally occupied. In a comment on Ecuador concerning the application of the Discrimination (Employment and Occupation) Convention, 1958 (No. 111), the Committee of Experts stated in general terms that in rural areas – where indigenous peoples have lost all or most of their traditional lands and become farm workers – their main problem could well be *de facto* discrimination in working conditions. And where they earn a living as subsistence farmers alongside non-indigenous farmers and lessees, their principal problems often arise from inequalities in obtaining loans or from the lack of facilities for marketing their produce, publicity programmes and of the wherewithal for upgrading their professional qualifications.

As regards the wages of these workers, the Committee of Experts has identified instances of discrimination in relation to non-indigenous workers. A case in point is that of workers on estates in El Chaco in Paraguay, where the Committee also took note of reports that wages owed to indigenous workers are paid only at the end of the year with a good many deductions, including for food, which is overvalued in many instances. It also pointed to the existence of wage discrimination, as the minimum wage paid to indigenous workers is lower than the statutory minimum, while non-indigenous workers receive higher wages for the same type of work.

As for the labour situation of indigenous workers, a publication by a human rights organization,³ submitted by a trade union organization and cited in the Committee of Experts' 1999 observation on Mexico, alleges that the wives of day labourers, for the most part indigenous women, "are the ones who perform the most onerous tasks", sometimes working 18- to

20-hour days covering domestic chores and farm work, their wages always being considered as complementary to that of their husband. Besides, they have neither maternity leave nor medical care during pregnancy and must work until the last day of pregnancy.

Even though the product of rural work is of crucial importance to all societies, the solution to the myriad problems besetting these workers, both men and women of indigenous origin, is yet to be devised. More proactive rural labour inspection could undoubtedly lay the groundwork for improving the working conditions of these workers. Yet, an ILO study⁴ cites the examples of several countries in the region (Brazil, Honduras and Uruguay) where, in the early 1990s, farm labour inspection rarely exceeded 1 per cent of all visits and most of these came in response to individual complaints or stemmed from trade union action. Such visits are even less frequent when it comes to indigenous workers and no reliable statistics exist in that connection.

It is now imperative to foster a new awareness on the part of civil society, the competent government authorities and trade union organizations that will lead to coordinated and effective actions if these workers are to be guaranteed the full enjoyment of their fundamental human rights and if social justice is to prevail for those who have been excluded for so long.

Notes

¹ *Wage workers in agriculture: Conditions of employment and work*, Sectoral Activities Programme, ILO, Geneva, 1996.

² *Report of the Committee of Experts on the Application of Standards and Recommendations*. 87th International Labour Conference, 1999.

³ *Slavery in Mexico. Rural migrant workers... their human rights* Miguel Agustín Pro Juárez, A.C. Human Rights Centre, Mexico D.F., 1998.

⁴ *Wage workers in agriculture*, *op. cit.*, note 1.

The World Health Organization (WHO) estimates that only 5 to 10 per cent of all workers in developing countries have access to health services at the workplace, as against 20 to 50 per cent in industrialized countries. The World Bank for its part states that two thirds of economic losses attributable to industrial diseases and accidents could have been averted by prevention programmes (WHO, 1997).

Short of appropriate measures, grave consequences are likely

The outlook for world agricultural production would seem bright for the end of the present decade thanks to a growth rate clearly outstripping the average for the 1980s. (FAO, 1996; World Bank, 1980, 1982). Yet, in the context of world economic globalization, agriculture is undergoing radical change which, combined with the impoverishment of rural dwellers, the lack of training in health and safety and the deregulation of the sector, is further undermining the living and working conditions of small farmers and agricultural workers in Latin America.

The lack of reliable and representative statistics further complicates the task of assessing the situation, despite which it may be concluded that if specific measures are not taken in

the very near future, serious consequences will soon be felt throughout the world stemming from worsening poverty, joblessness, poor working conditions and their concomitants of rural and urban violence, food dependency, international migration and the increasing external indebtedness of countries. The guarantee of the right of association and the application of core labour standards will be the key to warding off such a prospect.

Including agricultural workers in the development process

On the strength of experience from earlier projects, specifically those carried out in Central America since 1993 (ECLAC, 1993), the ILO is able to lend its cooperation for the updating of relevant legislation, facilitating tripartite coordination on agricultural employment policies, promoting occupational health and safety, developing social security programmes and in organizing training for the various players in risk prevention and control in agriculture. Only in this context of improved living and working conditions will it be possible to combine stable development with the advancement of agricultural workers.

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Note

¹ *Latifundio*, vast estate belonging to a single owner, of which a small part is devoted to livestock or agriculture.

Panorama of accidents and diseases in rural work in Brazil

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International data has revealed that rural work is one of the most dangerous activities, due to the high disease and accident rates which characterize the sector and also to the severity of the same. The International Labour Office (ILO) affirms that work in agriculture is significantly more dangerous than other work activities. It estimates that millions of farmers suffer serious damage to their health and that 170,000 of them die every year in the world, due to their work in this sector. According to further ILO data in the United States, where rural producers and workers make up just 3 per cent of the workforce, agricultural activities account for 8 per cent of all accidents at work; and in Italy, in spite of rural production accounting for just 9.7 per cent of the workforce, 28.7 per cent of all occupational accidents occur in agriculture (ILO, 1997).

Agriculture vies for first place

Specialists in the United States say that probably no other occupation includes a wider range of health hazards than work in agriculture and they estimate that 6 per cent of the farmers of that country work with some disability provoked by accident, more than in any other industry (Cordes and Rea, 1991). In the United States, Australia, Canada and in other countries where statistical data on mortality and morbidity related to rural work are available, agriculture vies year by year with the construction, mining and transport industries for the first place in the ranking of occupational disease and accident rates.

Commenting on the high mortality rate among different sectors of work, the ILO affirms that the mortality rates in agriculture have continued at consistently high levels during the last decade, contrasting with other haz-

ardous occupations like mining and construction where the fatal accident rates have been declining (ILO, 1997).

Dependent on weather and prices

Although the countryside is generally thought of as a bucolic and peaceful place, rural work has been described as one of the most stressful occupations owing to the fact that it is undertaken under adverse weather conditions, and due to its dangerous nature, isolation, workload and working hours, and the economic vulnerability of workers in the sector. The farmers' lack of control over the instability of prices of agricultural produce and the sector's vulnerability to the environmental conditions that interfere in the production and cost of their produce are factors that lead to depression and anxiety (Ellis and Gordon, 1991).

Accidents involving beasts of burden and domesticated animals are also frequent. A study conducted by the United States National Safety Council in 31 states of that country indicated that animals were involved in 18 per cent of the reported injuries, mainly cows and horses (Cummings, 1991). Parasitic and infectious diseases are also common: about 40 of the 150 zoonoses and parasitic infections occurring in the world are of occupational importance in agriculture, such as encephalitis, brucellosis, tetanus and leptospirosis, for example (Kligman et al., 1991). Machinery and other equipment used in agriculture and forestry are also responsible for a range of accidents and diseases, among them exposure to vibration and noise above the advisable levels, accidents due to overturning of machines and accidents provoked by moving transmission parts. In Missouri, United States, it was found that 16.8 per cent of the farmers between 25 and 64 years of age presented hearing loss sufficient to interfere with verbal communication (Crutchfield and Sparks, 1991). In Australia, 70 per cent of the deaths resulting from occupational acci-

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dents in agriculture between 1982 and 1984 were caused by moving mechanical equipment and 40 per cent were provoked by tractors or implements drawn by them (Erlich et al., 1993). Statistics for the United States point to the tractor as being responsible for 40 to 60 per cent of the accidents and deaths in agriculture (Coye, 1985). In 1989, there were 7.2 deaths per 100,000 tractors, and tipping and overturning contributed to 55 per cent of all the fatal accidents (Cordes and Rea, 1991).

Farmers are also exposed to chemical products, noxious gases and toxic dusts that can provoke respiratory diseases. Some substances are suspected carcinogens, such as solvents, paints, fuels, machines' exhaust fumes and pesticides. Results of epidemiological studies indicate that farmers have higher risks for some diseases such as leukaemia and cancers of the lip, stomach, skin, prostate, brain and conjunctive tissues, among other diseases (Blair and Zahm, 1991).

Despite all the data showing the immense diversity of health hazards to which rural

workers are exposed, in general, especially in the developing countries, attention is mainly concentrated on the problems related to pesticides due to the gravity and number of cases. The World Health Organization (WHO) estimates that, annually, there are 700,000 cases of acute intoxication in the world, with more than 13,000 deaths caused by rural work with pesticides. In spite of the fact that they consume just 25 per cent of all the pesticides marketed throughout the world, the developing countries account for 90 per cent of the cases of acute intoxication and 99 per cent of the deaths provoked by such products (Garcia, 1996).

Brazil

Brazil now has rates of urbanization similar to those of the developed countries and in some cases surpasses them (Alves et al., 1999). However, part of the urban population works in rural occupations. The distribution of the rural and urban population in Brazil in 1996 is shown in Table 1.

Table 1. Distribution of the rural and urban population for the regions of Brazil, 1996

Region	Total population		Urban population		Rural population		Proportion of rural population
	[a]	[b]	[b/a]		[c]		[c/a]
	x 1000	x 1000	%	%	x 1000	%	%
North	11 288	7 039	5.7	62.4	4 249	12.5	37.6
North-East	44 767	29 198	23.7	65.2	15 569	45.6	34.8
Central-West	10 501	8 865	7.2	84.4	1 636	4.8	15.6
South-East	67 001	59 709	48.6	89.1	7 292	21.4	10.9
South	23 514	18 157	14.8	77.2	5 357	15.7	22.8
Total (Brazil)	157 071	122 968	100.0	78.3	34 102	100.0	21.7

Source: Adapted from Alves et al., 1999.

Table 2. Distribution of economically active population over 10 years of age by branch of economic activity of main occupation, Brazil, 1996

Economic activity	People occupied ¹ (per cent)
Agriculture	24.5
Manufacturing industry, construction and others	19.9
Commerce	13.1
Services ²	42.5

¹ Total number: 68,040,206; ² Includes: service providers, auxiliary services of economic activity, social service, public administration, transport and communication, and other activities.

Source: Adapted from Alves Filho, 1999 and from Fundação Instituto Brasileiro de Geografia e Estatística (IBGE), 1998.

In Brazil, technology has brought agriculture the conditions to increase production, but, unlike the industrialized countries, no policies were set in place to protect workers against the effects of unemployment and to preserve incomes in the sector. Technology increases the rate of rural exodus, substituting employees and those that produce in family farms (Alves, 1999). However, it is important to note that the number of people occupied in agricultural work still represented 24.5 per cent of the total economically active population in the country in 1996, or almost 18 million workers (Alves Filho, 1999; IBGE, 1996). For example, that number is 23 per cent more than the total number of people occupied in industrial activities, as shown in Table 2.

Under-reporting aggravated

The poor social and economic conditions and inadequate working conditions which in general prevail in the rural sector, combined with the large number of people who work in agriculture, indicate that the situation in Brazil must be much more critical in relation to the number and gravity of occupational diseases and accidents than the countries previously mentioned. The same is also reflected in the registration and reporting of the occurrences of

diseases and accidents related to such work, because the peculiarities of agricultural production and of rural work further aggravate the under-reporting of occupational diseases and accidents, common to all sections of the Brazilian economy (Alves Filho, 1999).

The official registration of occupational accidents in Brazil is made by means of a reporting instance called CAT (*Comunicação de Acidente do Trabalho* – Occupational accident notification), which is only applied to the work force that is covered by the INSS (National Social Security Institute), which represents a little more than a third of the total of the working population in Brazil and includes a much reduced number of rural workers, as can be seen in Table 3.

Accident statistics can also be obtained indirectly through the analysis of the data from claims for compensation for occupational accidents and diseases that are granted by the state welfare department: accident supplements, disease supplements, disability retirement, and death pensions (Alves Filho, 1999).

Table 4 presents notification of fatal occupational accident data and disability leave resulting from accidents.

Specific data on accidents and diseases resulting from rural work are obtained through partial research projects.

Table 3. People in employment and workers registered by the INSS – National Social Security Institute, Brazil, 1996

	People in employment	Workers registered by the INSS
Brazil (all areas of economic activity)	68 040 206	24 311 448
Agricultural activity	17 930 728	1 000 000 (approximately)

Source: IBGE, 1998 and Alves Filho, 1999.

Table 4. Distribution of frequency and ratio of fatal occupational accidents and permanent partial disability, according to the groups of economic activities, per 100 000 workers, Brazil, 1997

Groups of economic activity	Frequency	Ratio (per 100,000 workers)
<i>Fatal occupational accidents</i>		
Agriculture, cattle rearing and related activities	183	19.44
Reafforestation, forest exploitation and related services	13	21.39
<i>Sick leave for permanent partial disability</i>		
Agriculture, cattle rearing and related activities	246	26.13
Reafforestation, forest exploitation and related services	14	23.03

Source: Ministry of Labour and Employment, 1999.

Already over a hundred thousand accidents in the seventies

A study carried out by the Secretariat of Agriculture of the State of São Paulo more than 20 years ago (1975/76) already indicated the seriousness of the problem: based on a sample of 3,589 farms, it was verified that about 10 per cent presented occupational accidents during the period (one year), with 1,331 accidents with 24 deaths. The study extrapolates the data for the State of São Paulo estimating that 28,378 farms could have presented accidents and estimated the occurrence of 106,696 occupational accidents with 1925 deaths in that agricultural year (Lorena, 1977a).

The sequel to this study showed the distribution of accidents according to cause, agricultural activity and location, as shown in Tables 5 and 6 respectively. The highest occurrence of accidents is seen in the sugar cane plantations, where the employment of manual cutting with the use of hand tools is more representative. However, tractors and agricultural machines are also shown as important causes of accidents.

Accidents highest in the State of São Paulo with hand tools

Fundacentro carried out a study on the information contained in a sample of 32,494 Rural CATs (Occupational Accident Notifications) in eight states, recorded between 1983 and 1985, where it could be observed, for example, that at least 94 per cent of the reported accidents resulted in sick leave, and in 62.2 per cent of those cases the leave was for more than ten days, stressing the severity of the notified accidents (Meirelles, 1989).

That same study showed that in the State of Santa Catarina, where agricultural production is mainly in smallholdings and where mechanization is widespread, accidents with mechanical equipment represented 24.47 per cent of all accidents, and accidents with hand tools totalled 16.71 per cent. In the State of São Paulo, where a large part of the production comes from extensive single-crop plantations (sugar cane, orange, reforestation, coffee) which, besides the use of mechanization, still employ large numbers of temporary workers who

Table 5. Estimate of the distribution of occupational accidents, by cause, in the State of São Paulo, during the agricultural year 1975/76

Cause	per cent
Hand tools	46.0
Tractors and other agricultural machinery	12.4
Animals	11.3
Transport	10.3
Pesticides	5.6
Snake bites	2.3
Others	12.1
Total	100.0

Source: Adapted from Lorena, 1977.

Table 6. Estimate of the distribution of occupational accidents, by type of agricultural activity in the State of São Paulo in the agricultural year 1975/76

Type of agricultural activity	per cent
Sugar cane	55.1
Coffee	4.6
Corn	3.8
Oranges	3.3
Cotton	3.0
Rice	2.1
Other plantations	3.9
Cattle	14.9
Not specified	9.3
Total	100.0

Source: Adapted from Lorena, 1977.

work mainly with hand tools (machete, hoe and axe), it was again observed that the largest percentage of accidents were associated with the use of hand tools, with 45.15 per cent while accidents with mechanical equipment represented 11.12 per cent of the total (Meirelles and Yamashita, 1988).

Fatigue leads to poor coordination

The changes in the forms of work organization in agricultural production have transformed the rural worker into the category of salaried worker, but without the employment guarantees present in the industrial sector. Due to remuneration for actual production (piece-work), the mobile or temporary workers carry out their work in exhausting conditions in order to earn a living. It is these conditions that, as a result of fatigue, lead to accidents, because the workers are unable to coordinate their thinking properly and consequently their movements.

Pesticides

In 1985, a study carried out by the Secretariat of Health of the State of São Paulo in the region of the Vale do Ribeira, confirmed that pesticide intoxication presented an adult mortality of almost six times that of contagious diseases notified in the area in the same period (Lorena, 1977a). In one study carried out by Fundacentro during the same period, 28 per cent of 5,143 workers and rural producers in nine states declared that they had already suffered from pesticide intoxication at least once during their working life, and 37 per cent of the same had suffered from this experience more than once (Garcia, 1996). In the period from 1983 to 1993, an average of 1,036 cases of acute intoxication were registered annually in the State of Paraná, according to Garcia.

Data produced in 1997 by a joint study between the State Secretariat of Agriculture and Fundacentro, covering 3,000 farms in 100 municipal districts in the State of São Paulo, showed that 16 per cent of the farmers interviewed had already needed to seek medical advice due to health problems caused by pesticides (Ramos, 1999). Based on the data of occurrences of intoxication available nationwide, collected and disseminated by the National System of Toxic-Pharmacological Information of the Ministry of Health, Garcia estimated that the number of cases of acute

intoxication caused by pesticides among workers involved in the handling of these products in agricultural activities in Brazil is of the order of 150,000 to 200,000 cases annually. It can be inferred from these numbers that there are at least 3,000 deaths per year, provoked by rural work with pesticides in the country as a whole.

If we consider that the number of occupational accidents reported in recent years among workers covered by the INSS, which includes very little data about agriculture, have been of the order of 400,000 cases per year and about 3,000 to 4,000 deaths per year, we can see the magnitude of the numbers of accidents in the rural work, not to mention what these figures must represent in terms of the consequent social and economic costs.

Transport of workers

Another important type of accident is related to the transport of rural workers in trucks or buses. Most of the time the vehicles circulate in precarious conditions of maintenance and conservation and have been provoking a great number of serious accidents, as can be seen in Table 7.

The precarious conditions in which the workers were transported were eventually to lead to local legislation and collective agreements (agreements between workers and companies, ratified by the Government) obliging the companies to use passenger transport vehicles (buses) and not trucks.

Table 7. Accidents in the transport of rural workers, notified by the press in the State of São Paulo, 1980 to 1990

Year	Accidents	Injured	Deaths
1980	6	7	12
1981	8	102	19
1982	10	120	65
1983	17	278	73
1984	6	84	18
1985	8	126	23
1986	4	93	5
1987	1	11	12
1988	2	41	2
1989	1	11	12
1990	6	167	8
Total	69	1029	249

Source: Federation of Organs for Social and Educational Attendance (FASE) 1991, cited by Adissi, 1997.

Poisonous animals

Accidents involving poisonous animals (snakes, spiders, scorpions, stinging caterpillars, ants and bees) are important in a tropical country like Brazil, especially during the periods of high temperatures. This type of accident is registered by the Ministry of Health mainly by checking the rate of distribution of serums. However, available data do not indicate how many incidents are of occupational origin. The rate of accidents involving snakes in Brazil, in the period from 1990 to 1993, was 13.5 accidents per 100,000 inhabitants, with the central-west area presenting the highest incidence. In the same period, 81,611 accidents were reported in the country, with 359 deaths, i.e. 0.45 per cent resulted in death (Ministry of Health, 1998).

Scorpions, spiders, ants and bees

Since a formal instance was set up in 1998 for reporting scorpion accidents in Brazil, scorpion stings have been contributing increasingly to the number of reported cases of accidents with poisonous animals. Ministry of Health data indicate the occurrence of 8,000 accidents per year, with a rate of approximately three cases per 100,000 inhabitants and with the largest number of reporting coming from the States of Minas Gerais and São Paulo, responsible together for 50 per cent of the total.

With spiders, the rate is around 1.5 cases per 100,000 inhabitants, with 18 deaths notified in the period 1990-93, mostly in the south and south-eastern areas. There are also reports of accidents involving moths and butterflies, caused by contact with stinging caterpillars and moth bristles, and beetles, through the action of toxic substances with a caustic and blistering effect liberated by compression or brushing with the skin. Ants and bees are also included as the cause of accidents (Ministry of Health, 1998).

Mechanization

Development in the agricultural and forestry sectors, as in the other sectors of the economy, is increasingly leading to the use of new technologies. Historically, in Brazil, the introduction of new technologies has not been accompanied by a study of their impact on the environment and human beings. Thus, despite having contributed to the increase in produc-

tivity and being responsible for the availability of more foodstuffs and raw material for human survival and comfort, they have also brought ill effects on workers' health and the environment, previously unknown.

With the competition represented by the external market and the ensuing need to cut operational costs and labour in some places, a lot of companies have been adopting the employment of modern technologies for the optimization of the productive system. The automated process is already a reality in many units of agricultural and forestry production, mainly in flatter areas where the operation is viable.

Mismatch in technology transfer

The process of agricultural production and the adoption of mechanization depend on different factors represented by location, climate, topography, labour availability, crops cultivated, intended handling, availability and mastery of technology, labour qualification and the cost-benefit ratio. Thus, at each stage of the process, the adoption of new equipment occurs at different moments, bringing different occupational problems, even among companies in the same production sector. Similarly, the impact of the transfer of technology from the industrialized countries to the developing countries must always be considered. The results obtained in the industrialized countries do not always attend to the characteristics of the developing countries, that is, the technology transfer does not always obey the transfer of ergonomics (FAO, 1992).

Exposure to various hazards such as noise, vibration and excessive heat, worsened by the inadequacy of the workstation (location of operating controls, seat, etc.), can lead workers to contract diseases during their working life. This can happen because of the difference between the characteristics of the users of machines in the developed countries and in the developing countries, the lack of safety equipment due to the lack of norms to regulate the commercialization of products and the lack of knowledge of the consumers.

In the developing countries, manufacturers do not always offer machines, equipment and tools that satisfy standards of safety and comfort that are in force in the country of origin. This may be due either to the lack of demand in the purchasing countries, or to the lack of legislation that regulates the area.

Checks on functionality and durability

The contribution of mechanization in raising the technological pattern of Brazilian agriculture placed the farmer in contact with a great variety of machinery headed to perform several agricultural operations. In order to check the functionality requirements and durability of this equipment, testing of agricultural machines was introduced in the country, which at the beginning only measured the operational attributes. Concern with aspects of safety and ergonomics in agricultural machinery started to grow around the eighties, when some research institutes began carrying out some tests. Certain models of agricultural tractors then started to incorporate the recommendations suggested by these test reports, such as protection for the power socket and transmission shaft and improvement in visibility, among others.

Nowadays, the concern of the machinery manufacturers with quality aspects in the production process, because of the ISO 9000 requirements, and with aspects of environmental preservation, because of the ISO 14000 requirements, opens the way for machinery safety and ergonomics in agricultural equipment to be better observed and followed.

Child and adolescent labour

In 1995, Brazil had approximately 8 million children and adolescents, between 5 and 17 years of age, working. Of these, most of the 522 thousand children between 5 and 9 years of age worked in agricultural activities. Most do not receive any type of remuneration, because they work helping their parents to increase production. Of the children in the age group from 10 to 14 years old, more than half do not receive any remuneration and they work from 15 to 39 hours a week, absent from school. Of the adolescents from 15 to 17 years of age, 19.6 per cent had abandoned school once and for all to work. The long working day is one of the factors that leads them to drop out school: 24 per cent of the workpeople from 10 to 14 years old and 63 per cent of the adolescents from 14 to 17 years old work 40 hours a week or more (Rizzini, 1999).

In a study developed by Fundacentro in 1989 in citrus fruit cultivation, children of temporary workers, under 14 years of age, were found working harvesting crops. They helped to raise the income of their parents who were paid by piecework. Those responsible for con-

tracting the labour force justified the children's presence in the field as goodwill on the part of the employers, allowing the children to remain close to their parents while they worked. However, work began at seven o'clock in the morning and finished at four o'clock in the afternoon, without considering the time spent in commuting, which meant that these children were absent from school. The work of citrus harvesting demands constant movements of crouching down and straightening up, and climbing up and down ladders, with sacks weighing 30 kilos. The ladders used in the harvesting frequently fell over (Yamashita, 1995).

The employment of children and adolescents also occurs in other insalubrious and dangerous work, such as in the plantations of sugar cane, sisal and tobacco, in charcoal production and in extraction of precious stones.

Child labourers, victims of poverty

In 1997, there were 54 million poor people in Brazil (i.e. 34 per cent of the inhabitants of the country), of which 24 million are indigent (below the poverty level) (Lahóz, 1999). In Table 8 it can be seen that 36 per cent of the poor are found in the rural area.

Economic instability has been present in the country for a long time. In 1986, during the economic plan called Plano Cruzado, there was a stabilization of the economy with a fall in the poverty level: from 65 million poor people in 1984, to 41.5 million in 1986. With the failure of the plan and the return of inflation, the number of poor people returned to practically the same levels as at the beginning of the decade. With the "Plano Real", now in force, the number of poor again dropped by about 10 million and has remained stable, according to data from the IPEA (Institute of Applied Economic Research) (Lahóz, 1999).

Table 8. Distribution of poor people in Brazil, 1997

Regions	per cent of poor people
Centre of metropolitan regions	9
Outskirts of metropolitan regions	9
Other large cities	13
Medium-sized cities	14
Small cities	20
Rural area	36

Source: Adapted from Lahóz, 1999.

Since 1992, the International Programme for the Elimination of Child Labour (IPEC) has been enforced in Brazil, and since 1994, the National Forum for the Prevention and Eradication of Child Labour, formed by government, non-governmental and multilateral institutions which promote jointly campaigns to combat child labour, has been active, with support from the International Labour Office. The Abrinq Foundation for Children's Rights created the programme "Child Friendly Enterprise" which counts on the participation of more than a thousand companies, committed to eliminate child labour in sectors such as the automobile and footwear industries, and orange and sugar cane plantations (Rizzini, 1999).

In 1997, the Brazilian Government set up a programme to remove children from work in the states where there is more exploitation, like Mato Grosso do Sul, Pernambuco and Bahia. Up until the beginning of 1988, 38 thousand children had benefited. Some state governments have similar programmes, through programmes which are integrated with those of the Federal Government (Rizzini, 1999).

Control actions and prevention

Due to the peculiarities of the rural sector, several strategies have been sought for the development of control actions and prevention of diseases and accidents resulting from rural work. Initiatives on the part of government organs, trade unions and other organizations of the civil society have been attempting to address the problem as outlined.

The publishing on 12 April 1988 by the Ministry of Labour of the NRRs – Rural Regulatory Norms – that regulate questions of safety and health in rural work, was in recognition of the need to establish policies for the sector. So 15 years had elapsed since they had first been prescribed in article 13, LAW 5889, on 5 June 1973, until their publication. Despite having been shelved for 27 years since first proposed and 12 years since published, the implementation of these norms, for various reasons, is still incipient. The inadequacy of some of the items and the difficulties involved in enforcing these norms, imposed by the difficult conditions of access and the immense geographical dispersion of the units of production in the rural areas partially account for the slow pace of implementation.

The ILO partially recognizes the lack of infrastructure to deal with the legal questions in the rural sector, commenting that: "Although

the conditions vary a lot from country to country, agriculture tends to be excluded from many national labour laws and it is not the object of any comprehensive international norm. Where regulations do exist, they are sporadically applied due to the inadequacy of legal measures, low level of union organization and insufficient labour inspections" (ILO, 1997).

Through a government initiative, in the year 2000 the Rural Regulatory Norms will be reviewed by means of tripartite discussions, i.e. with representatives from government, employers and workers.

Tripartite talks produce results

The policy of tripartite discussion involving companies, workers and government established by the Ministry of the Labour and Employment, has brought good results in the revision and establishment of norms and regulations in the area of occupational safety and health, including in the rural sector. An example of this is the regulation on the use and commercialization of chainsaws, in answer to a demand mainly from the State of Pará, in the Amazon area: the occurrence of serious and fatal accidents in the use of chainsaws in the extraction of timber from natural forests led the Ministry of Labour, as a result of tripartite negotiation, to publish in 1994 a Regulation controlling the use and commercialization of chainsaws in the country in relation to aspects of safety and ergonomics and the obligation for training for the users of this type of equipment.

In addition, some localized actions, through initiatives by unions, government and other entities, were or are being implemented to deal with this question.

Partnerships

An interesting example was the recent initiative by a trade union entity, CONTAG (National Confederation of Agricultural Workers) which, in partnership with Fundacentro, sought deeper penetration and coverage for rural people in the dissemination of information about safety and health by radio. From August 1996 to May 1997, 30-second messages and several interviews with technicians, unionists and other personalities active in the sector, were widely broadcast by 544 radio stations countrywide, and seven regional and one national seminar were held to discuss the main problems and proposals to combat them (Série da Fundacentro, 1997).

Another recent example is the partnership between Fundacentro and the Agriculture Secretariat of the State of São Paulo which is in full development and has been obtaining important results. The activities of this partnership mobilized various organs of the State and other institutions with the aim to reduce the risks in pesticide use (the State of São Paulo consumes 25 per cent of all pesticides sold in the country) and disseminate production techniques which have fewer ill effects on health and the environment. Actions include data collection about the use of pesticides and working conditions; dissemination of information among rural workers and producers; environmental education for children at rural schools; development of studies aimed at reducing pesticide use and worker exposure; improvements in the monitoring of residues in foodstuffs and the environment; health surveillance of the populations exposed to pesticides; and strengthening and structuring inspection activities to control pesticides (Ministry of Labour, 1997).

Initiatives like these are fundamental. But, international data and the more persuasive national data, the poor working conditions which predominate in agricultural activities and the number of people working in the area, all demonstrate the pre-eminent need for further increased attention on the part of all social and economic parties which act in this area. Increased production and productivity and striving for more sustained levels of agricultural production must not dispense with strategies to deal with safety and health in rural work.

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The role of worker representation in health and safety in agriculture in Western Europe

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It is widely acknowledged that the level of work-related injuries, fatalities and ill health experienced in agriculture is unacceptably high, making it one of the most risky sectors of employment in the European Union (EU). At the same time, it is also recognized that the prevention of harm to agricultural workers faces considerable challenges that arise from the organization and culture of work in the sector as well as from the under-regulation and low levels of inspection and enforcement with which the sector is historically associated. Although they are often present in an extreme form in agriculture, many of these challenges are not unique to the sector. They are similar to those faced in other sectors such as the construction industry, in which small enterprises, casual and part-time work, peripheral work, contingent workers and the shadow economy predominate.

It was in part to meet such challenges that at the beginning of the 1990s the EU adopted a series of Directives in which a consistent approach to the mandatory management of occupational health and safety (OHS) of all workers in all sectors of employment is discernible. Elements of this approach, which is typified by the provisions of the EU Framework Directive 89/391, include that employers observe the following requirements:

- develop a prevention plan;
- undertake workplace risk assessment;
- use or employ competent prevention services; and
- provide the means to enable workers and their representatives to participate in all these activities.

Making preventive strategies relevant to agriculture

While such measures are perhaps more easily understood in relation to health and safety management in large organizations, they are nevertheless intended to provide a framework

in which a systematic approach to the management of health and safety can be achieved in all enterprises. In this respect, worker participation occupies a central position in EU preventive health and safety strategy. One reason for this centrality relates to the growing evidence that worker participation — and particularly representative worker participation — has a beneficial impact on health and safety performance within enterprises. Here again, however, evidence on the effectiveness of participation is far more readily available from experiences in large enterprises than it is for the kind of small enterprises which characterize the agricultural sector. Supports for such representative participation are also more associated with large enterprises with stable workforces than with the small enterprises and the casual and contingent workforce that are characteristic of agriculture. The challenge for trade unions, regulators and other organizations involved in promoting better health and safety standards in agriculture is how to make the preventive strategies that are known to be effective in large enterprises and in other sectors of the economy relevant to the kind of situations typical of work in agriculture.

The aim of the following article is to consider the role that representative participation in health and safety management can play in improving health and safety performance in workplaces that are typical of those in the agricultural sector. Drawing on research findings from a number of countries in Western Europe as well as North America and Australasia, it outlines the evidence for the effectiveness of representative worker participation in health and safety and identifies factors known to support such effectiveness. The question of the relevance of representative participation to the agricultural situation is then addressed. A brief outline of the characteristics of agricultural employment in Western Europe and the main features of health and safety performance in the sector serve to draw attention to the extent of

the challenges that the sector poses for worker representation and for its contribution to preventive strategies on health and safety. Ways in which such challenges have been met are discussed through examples of regulatory approaches, trade union initiatives and joint trade union employer schemes in which worker representatives are involved in improving health and safety performance in various countries in Western Europe. Examples include some from the agricultural sector but are mainly drawn from other sectors of employment and used to illustrate the potential such schemes may offer agriculture. The strengths and limitations of these various approaches will be discussed and the legislative and organizational supports necessary to enhance their effectiveness as well as the resource implications of such support will be considered.

The effect of worker representation on health and safety performance

That the participation of workers in the organization of workplace health and safety improves occupational health and safety management is widely recognized. Support for this notion is evident in a variety of studies from a range of industrial countries. Thus, British studies show that better standards of health and safety are achieved in unionized workplaces than in non-unionized workplaces (Walters, 1996a; Grunberg, 1983; Walters and Gourlay, 1990). They show that when employers manage health and safety without consultation, performance (as measured by objective indices such as injury rates) is considerably worse than when they consult with their workers on health and safety management. Indeed, one study showed that such organizations were likely to have twice as many accidents as those in which worker representatives were involved in consultation with managers on health and safety (Reilly et al., 1995). Similar findings are reported in Australian work (Quinlan, 1993; Biggins et al., 1991; Warren-Langford et al., 1993). North American authors show that trade union presence affects occupational health and safety standards, even under non-participatory legislation (Dedobbeleer et al., 1990; Weil, 1991). In other Western European countries, comparative studies indicate that representative participation improves health and safety outcomes and that the determinants of effective representation and support for dialogue as well as backing for representatives in conflictual situations are similar to those identified in British and Australian

studies despite different cultures of industrial relations (Walters et al., 1993; Walters, 1990).

What makes health and safety representatives effective ?

If worker representation does make a positive contribution to improved health and safety performance, it is important to know what are the factors that support and strengthen its role. Key findings from research on the activities of health and safety representatives in the context of employment relations indicate that their effectiveness is strongly influenced by:

- a regulatory framework for employee representation in health and safety that is actively promoted by the regulatory agencies/labour inspectorate;
- management commitment to both health and safety and employee participation and the centrality of the provision for preventive health and safety in management strategies for ensuring the quality and efficiency of production;
- strong workplace organization, the prioritization of health and safety issues, and the integration of employee representation in health and safety into the workplace organization for representation on other aspects of industrial relations;
- information and training for health and safety representatives; and
- consultation between health and safety representatives and the constituencies they represent.

Links between accidents and trade union influence

In other words, participation is unlikely to occur in either an effective or sustainable way without support. This is evident from a number of studies concerning the effectiveness of procedures for representation. Trade unions, large, stable enterprises and a tradition of negotiated cooperative arrangements feature significantly among the manifestations of such support. Conversely, objective measures of health and safety outcomes suggest links between rising levels of accidents and the declining influence of trade unions (Tombs, 1990; Nichols, 1997). Participative health and safety organization is more likely to be found in workplaces where there is some form of trade union organization present than in the workplaces where it is absent.

Works councils or trade unions?

Research on the operation of representation stresses the importance of workers' organizations in supporting the effectiveness of this form of participation. The meaning of "workers' organization" needs clarifying. It is used here firstly to describe a form of workers' organization within the workplace which is autonomous in relation to management and which may involve trade union representatives but does not necessarily do so. For example, there are some works councils which have little or no trade union presence on them but which are nevertheless able to exert considerable autonomous influence on worker representation in health and safety. Secondly, it is also used here to describe the support for workers' organizations inside enterprises by institutions of organized labour which operate from outside enterprises. These are normally referring to trade union sectoral, regional and national infrastructures.

More problems if trade unions are absent

In Anglo-American countries where worker organization within enterprises effectively means trade union workplace organization, the question of effectiveness of worker health and safety representatives is largely related to the extent to which such representation can be said to be trade union representation. In such countries, little information is available on the experiences of health and safety representatives that operate without trade union support, but such that there is indicates that the same kind of determinants of effectiveness would apply (Spaven and Wright, 1993; Woolfson, Foster and Beck, 1996). However, in these situations, sustained support for achieving such effectiveness in the absence of trade unions is likely to be more problematic and it is by no means clear from what source such support would come or how it could be sustained (James and Walters, 1997). In countries where worker organization within the workplace is not necessarily trade union organization – as is the case in a number of European countries where elections of worker representatives may result in workplace organizations consisting of predominantly non-union representatives – the independence of the workplace organization is still important and trade unions still remain the main source of external support for its effectiveness through such things as their training and information services (Walters, 1994).

Enabling structures and procedures

Research on the activities of safety representatives and safety committees in the United Kingdom has concentrated upon other determinants of effectiveness than simply the role of trade unions. However, many such determinants are more likely to be found in unionized than non-unionized firms. For example, Beaumont's work on joint safety committees (Beaumont et al., 1982), much in the same vein as a previous American study (Kochan et al., 1977), found that the more effective committees were the ones where both employee representatives and management were well trained and where representation operated through established trade union channels. Other determinants identified, such as regular meetings, regular attendance by representatives, and good communication with other employees are also most likely to be met within unionized firms and the trade unions in such firms will have played a significant role in creating the structures and procedures that make such situations possible.

Trade union training crucial

As well as the support of the workplace organization, trade unions outside the workplace, at both national and regional levels, also have an important role: the significance of both the quality and quantity of trade union training has emerged very clearly from European surveys as crucial to both the development and integration of representation in health and safety at the workplace level (Walters, 1996b; Raulier and Walters, 1995). It is also unmatched by any other source of provision. Trade unions have an additional important role as instigators of change at local, national and international levels. The quality of their proactive role in the process of representation is an important feature of its success. In addition, there is evidence to suggest that their presence can enhance the activities of other players in the organization of preventive health and safety, such as those of the regulatory authorities (Neil, 1991).

The characteristics of agricultural employment and its consequences for health and safety

Clearly, many of the above conditions known to support effective worker representation in health and safety will not be met in agriculture. With few exceptions in Western Europe, agricultural employment means

employment in small enterprises. For example, of the 47,907 agricultural holdings in the United Kingdom in 1995, only 528 employed 15 or more full-time workers (including family workers) and 64 per cent of agricultural workers worked in enterprises with less than five workers.

Reduced labour force, lowest trade union density

High levels of part-time and casual employment as well as extensive family labour are the norm, and employment and domicile are often closely interdependent in the sector. There has been a continuing trend towards a reduced labour force in the past decade with reductions particularly marked among regular hired workers. Trade union density is generally low and declining further. In many countries it is lower in agriculture than in any other sector. For example, in the United Kingdom it was 7 per cent in agriculture in the mid-1990s compared with an average of 2 per cent for all industrial sectors.

Paternalism of the pre-industrial era

Such aspects of agricultural employment, while following trends characteristic of post-industrial labour markets which reduce job security and collective workers' organization, also reflect a continuation of the conditions of a pre-industrial era. Studies of the social relations of farm-working have emphasized the paternalism evident in the relationship between farmers and their employees and explain how such relations tend to promote hostility to most forms of outside influence on employment and working conditions as well as encouraging intolerance of forms of collectivism and trade union organization. In addition, at the same time as the sector faces increased mechanization and its attendant risks to health and safety, it is rife with employment practices and traditions that are not compatible with conventional modern approaches to the management of health and safety.

Inspection and control have little direct impact

In most Western European countries, statutory regulation of health and safety in agriculture came as a belated addition to measures aimed at protecting workers and regulating health and safety in other sectors of employ-

ment. Indeed, its position in this respect is still separate from the mainstream of health and safety regulation in some countries. Because of this and because of the large numbers and inaccessibility of the small enterprises which make up the vast majority of the employment units in agriculture, inspection and control practices tend to be underdeveloped and have little direct impact on the majority of workplaces.

Second highest injury rate after construction

All these factors contribute to the considerable risks to health and safety experienced by agricultural workers and place the sector among the highest of industrial risk categories. In the United Kingdom, for example, results obtained from the Labour Force Survey for the total workplace injuries indicate that the agricultural sector has the second highest injury rate in the United Kingdom following the construction industry. The number of fatal injuries are also alarmingly high and a particularly disturbing feature of the injury data relates to the proportionally large number of serious injuries and fatalities which occur to children on farms.

The contribution of worker health and safety representation to improving health and safety in small enterprises

Although there is good evidence that worker representation contributes to improved health and safety performance in most industrial sectors, such evidence is largely absent from agriculture for the reasons already outlined. It is plain that conventional approaches to health and safety representation will not work in the sector: its culture, the attitudes of employers, the reduced presence of trade unions, the low level of labour inspection and the way in which work is organized in the sector, all militate against orthodox approaches to health and safety management and especially against traditional practices of worker representation. However, in all these respects, agricultural undertakings typify an extreme of small business culture. As such, they may be potentially receptive to prevention strategies in health and safety which are specifically tailored to the conditions of small enterprises and which have been tried with some success in the other sectors of employment in which small enterprises predominate.

More a problem of management than the technical nature of the hazards

The problem of health and safety outcomes in small enterprises is recognized throughout western Europe, where work in such enterprises is a major feature of national economies. Evidence from a number of countries shows that health and safety performance is weaker in small enterprises than in larger ones and data on injuries supports the conclusion that there is a size factor which influences their occurrence at work (Nichols, Dennis and Guy, 1990). At the same time, since in general the nature of hazards encountered in small workplaces are not necessarily any more severe than those in large ones, the problem for prevention seems to be more concerned with health and safety management than with the technical nature of either the hazards or their control.

Reasons for poor health and safety management in small enterprises have been attributed to a variety of factors such as:

- limited resources;
- limited knowledge of regulatory requirements;
- poor awareness of the economic advantages of health and safety;
- poor knowledge and understanding of safe working practices;
- short-term economic pressure and competition;
- inadequate enforcement; and
- absence of prevention services (Walters, 1998).

A problem of communication

Whatever the reason or combination of reasons for poor health and safety performance, they are neither inevitable nor are they the necessary consequences of enterprise size. However, they do indicate that there is a strong communication problem in persuading the owners and managers of small enterprises of the benefits of good health and safety management. This applies especially in agriculture where, as the previous outline of its characteristics should indicate, the challenges for risk communication are particularly extreme.

Small, under-resourced inspectorates

It has been awareness of the widespread problem concerning risk communication in health and safety management in small enter-

prises in general that has led regulatory authorities in some Western European countries to focus more of their attention on finding ways to improve communication within small enterprises. In doing so, they have recognized the limitations faced by small, under-resourced inspectorates when trying to reach the huge numbers of individual workplaces which constitute the small business sector. They have also realized that the image of the inspector/regulator may not be the most appropriate one to convey the message they wish to deliver to the sector concerning the benefits of health and safety management. For these reasons, they have started to explore the role that intermediaries in the small business environment might play in this respect. Such intermediaries cover a wide range of organizations which have dealings with small enterprises. For example, they might include insurance associations, trade and professional associations, local and regional small business start-up services, prevention services, training organizations, banks and accountants, to name but a few.

The trade union as intermediary

Trade unions represent an important form of intermediary and one which is well placed to make a significant contribution towards improving health and safety management in small enterprises: not only do they already have networks and support systems for representation, but also, strong incentives to adapt and extend this function. It contains enormous potential for trade unions that are currently concerned with their need to deal with the crisis of representation they are experiencing internationally and to find the new identities they hope will carry them forward. While relatively weak in agriculture, trade unions are nevertheless significant enough to be a potentially important resource as an intermediary in the sector. It is also possible that the development of this role would contribute to helping to increase their presence and importance in the sector.

The main ways in which trade unions have explored their contribution as intermediaries in health and safety management has been to try to find means to increase access of workers in small enterprises to representation on health and safety bodies. There are several approaches that have been tried with varying but significant measures of success. They have included: obtaining statutory rights to represent workers in small enterprises through regional or territorial health and safety representatives;

unilateral single sector initiatives by trade unions to increase access to representation through schemes involving roving representatives; joint trade union employer schemes in which worker representatives often operate alongside actors nominated by employers; collaboration between trade unions and the labour inspectorate/health and safety authorities; and schemes in which sectoral joint or tripartite structures are set up to support workers and their employers in small enterprises. Some examples of these schemes are outlined in the following paragraphs.

Statutory approaches

Statutory measures for the appointment of regional health and safety representatives for all sectors of employment, including agriculture have existed in *Sweden* since 1974. In *Norway*, similar measures have existed since 1981 but only in relation to the construction industry. Swedish provisions allow for the appointment by trade unions of health and safety representatives, usually with a brief to represent workers in small enterprises within a particular industrial sector and geographical area. The regional safety representatives are either full-time appointments, existing senior health and safety representatives from large firms, or full-time trade union officials who undertake the task in addition to other duties. Fundamental to the approach in these Nordic countries has been its resourcing from the outset by Work Environment Funds. Although its details have changed as new approaches to resourcing work environment schemes have been introduced, the regional representatives are still largely supported by resources drawn from outside of the trade unions.

The Swedish provisions are widely regarded as successful and recent evaluation has mostly confirmed this (Frick and Walters, 1998). They have also been influential in trade union thinking in other countries: strategies to achieve similar legislative measures have been a feature of trade union policies in several Western European countries in recent years. In some cases they have been at least partially successful. For example, in *Italy*, provisions on worker representation on health and safety introduced under Law 626 allow for the possibility of trade union appointment of territorial representatives. In the *United Kingdom*, similar measures have been canvassed by the trade unions since the Trades Union Congress (TUC) adopted a resolution to this effect in 1998. Cur-

rently, they are the subject of a public consultation exercise organized by the Health and Safety Commission (HSC, 1999). The demand for such measures is also being debated within the French trade union confederations and a call for legislative change in this area is likely to become trade union policy in *France* in the near future. In addition, the French unions are discussing the creation of health and safety advisors at regional level in all the federations. Although they would not have the statutory rights of territorial representatives — to enter workplaces, for example — they would be able to provide health and safety information advice and support for trade union members within small workplaces.

In *Greece*, an interesting variation of the use of statutory measures exists in relation to joint safety committees in shipbuilding and repair where under the provisions of Law 1767/88, joint health and safety committees have been set up for the many small enterprises and contractors involved in the shipbuilding and repair zone of Piraeus-Drapetsona-Keratsini-Perama-Salamina. Under the law, the committees have the right to control the implementation of health and safety legislation. The committees are composed of one representative of each of the Labour Inspectorate, the Merchant Marine and the Technical Chamber of Greece, and two elected representatives of the workers. The Labour Inspector is the chairperson of the committee. They therefore do not have any employers' representatives. Among the functions of the committee are regular joint inspections of the worksites under their jurisdiction. If there are enforcement actions following such inspection, these are undertaken solely by the labour inspectorate.

Trade union initiatives

Trade unions that organize in sectors in which there are large numbers of workers in small enterprises have had strategies on representation which accounted for the problems of size and fragmentation for many years. Thus, for example, in the United Kingdom the shop workers' trade union has a well developed system for representing its members in small workplaces through the appointment of organizers that cover large numbers of different workplaces usually within a particular region. Increasingly, as health and safety issues grow among the concerns of workers, such organizers become involved in health and safety issues and require training and support from the trade union in order to function effectively at such tasks.

Roving representatives

In addition to such practices which have evolved slowly, and in response to changing daily demands, trade unions have also attempted to introduce schemes in which regional or territorial representatives have been specifically designated to deal with health and safety. Such efforts have usually been influenced by the Nordic provisions but specifically adapted to suit the climate of the industrial sector and the national context in which they have been implemented. Perhaps one of the most relevant and interesting of such efforts is the roving safety representative scheme initiated by the Rural and Agricultural Workers section of the Transport and General Workers' Union in the United Kingdom in 1996. It facilitated the appointment of a number of roving safety representatives from among existing lay officials of the union in the south of England in 1996.

The limitations of a unilateral approach

The scheme was introduced unilaterally because of the trade union's increasing frustration at the failure to establish joint initiatives through the tripartite national structure for health and safety for the industry (the Agriculture Industry Advisory Committee). Although the Health and Safety Executive (HSE) gave its moral support to the scheme, the employers' organization, the National Union of Farmers (NFU) refused to support it and also refused to undertake any action to encourage its members to cooperate and allow the representatives to gain access to farms. As a result, in an evaluation of the scheme that was carried out in the second year of the operation, it was found that few visits to farms had been possible and that the representatives' activities had, in the main, concentrated on awareness raising outside the workplace, including among the membership of their trade union branches, agricultural employees and the general public (Walters, 1997). Although it demonstrated the success of the scheme in these respects and highlighted its overall potential, the evaluation stressed the limitations of this type of approach when enacted unilaterally and without the backing of legislation or the full voluntary support of all the parties affected. The point about legislative support was taken up by the trade unions when, following the evaluation, the TUC adopted a resolution calling for such legislation.

Meanwhile, the scheme in agriculture has continued to operate and appears to be slowly gaining greater credibility with the employers. Most of the representatives originally appointed are still in place and they have now been able to gain access to workplaces (although this is still limited in some cases). They have also received further training and become better integrated into the relevant trade union support mechanisms.

In *Spain*, the CC.OO has a system of making contact with workers in small enterprises through outreach teams of trade union officials (SLF, 1997). The system was set up in 1991 and it targets companies of between six and 49 workers. It was designed primarily for the purpose of union organization, particularly in relation to establishing trade union elections for workers' representatives. However, there is a widespread recognition of the fact that entry to small enterprises, where there is often employer hostility to union organization, is facilitated through focusing on areas which are of interest to both employers and workers. Health and safety issues fall into this category and outreach workers are able to demonstrate that the union has some expertise to offer in this area.

The outreach team members tend to be activists of long standing and have undergone a number of union training courses. They have a general knowledge of health and safety but have not normally undergone specialist training in this area. Their activity is directed at companies with no union organization. Following an initial meeting with management, the outreach workers normally hold several meetings with the workforce before the election of trade union representatives is held. Once these have taken place the team worker may stay in touch with the enterprise for up to six months afterwards, offering support, but the responsibility for the newly unionized small enterprise is transferred during this period to the corresponding union federation.

In *Denmark*, trade union support for representatives in small firms normally includes advice, information seminars and training. Recent changes in legislation mean that there is now a requirement concerning the election of safety representatives in workplaces with five or more employees, and trade unions have increased their efforts to provide support and networking for such representatives. There is an awareness within the trade unions that if significant numbers of new representatives are to be elected in small enterprises, the unions need to develop their role and identity to encompass

not only the traditional inspection and control model but also one in which a more participative and advisory role can be achieved.

Joint schemes for worker/employer representative involvement in health and safety management in small enterprises

The Agricultural Workers' Initiative described above is gradually transforming into a joint initiative as the Agricultural Industry Advisory Committee (AIAC), and has succeeded in persuading the NFU to cooperate following the evaluation of the original scheme. As a result, a joint initiative sponsored by the AIAC in which more roving representatives will be appointed alongside a number of health and safety advisers is currently under discussion. Together, they are to be supported in gaining access to farms and other agricultural workplaces. A further research project has been commissioned to evaluate the initiative by comparing the experiences of agricultural enterprises that make use of the representatives and advisers with another group who make no use of such support.

Need for collective agreements

Schemes in other countries and other sectors have been joint ventures from the start. For example, in *Italy*, where Decree 626/94 implements the EU Framework Directive and allows the possibility for the creation of territorial safety representatives, collective agreements have to be signed in order to operationalize such possibilities. This has occurred in several sectors such as crafts and commercial undertakings. In the Emilia-Romagna region a joint organization for craft companies (enterprises with less than 20 employees from all sectors except agriculture and the retail and wholesale trades) known as the Emilia-Romagna Bilateral Authority (EBER) was set up in 1991 to promote dialogue between employers and workers in the sector. In 1996, an agreement between the employers and trade union organizations in the sector was reached to provide resources (from a modest tax on employers of 5 Euro per employee per year) to enable EBER to deliver information, training and support for territorial representatives who are active in the craft sector. Operational support for the representatives is also provided through territorial joint committees that are present in different districts of the region.

In *Spain*, the development of bipartite initiatives is predictable, given the high degree of institutionalization of union management relations outside the firm and the tradition of corporatism in the country. For example, in the collective bargaining agreement for construction covering Asturias, provision is made for the appointment of joint employer/union delegates for health and safety outreach work with companies in the sector. These are supervised by a health and safety committee set up under the same agreement. Their role is seen as complementary to that of other intermediaries and their main function is to sensitize employers and workers to accident prevention and the tasks which need to be carried out in order to comply with the legislation. They are envisaged as acting as a "collaborating adviser" (*asesor colaborador*) rather than an inspector.

In *Denmark*, trade unions and employers' organizations have concluded agreements on outreach working which involve joint visits of employers and trade union representatives to small enterprises. Such arrangements exist, for example, in construction and hairdressing.

Other joint initiatives

There are a number of joint approaches to training provision for small enterprises in various western European countries. One example is the three-year (1999-2001) training plan adopted in Valencia, Spain, with the support of the regional authority: employers and trade unions seek to train 25,000 small enterprise owner/managers, 15,000 safety representatives and 10,000 employees designated as responsible for OHS. Training initiatives, in a sense, represent the easiest option for initiatives involving trade unions and employers. Funding tends to be forthcoming: it does not involve any direct intervention in the company and each social partner can look after the training of its own constituency, as will be the case in Valencia where the unions will organize training for safety representatives, and employers' associations for their own members. Similar joint schemes between individual trade unions and employers' organizations have existed for a number of years in the United Kingdom where, for example, trade unions in engineering, electricity and construction run joint courses with employers' associations in the sectors in which small enterprises and contractors are targeted.

Extra pair of eyes in CC.OO

Although most joint initiatives involving workers' representatives are between trade unions and employers, there are also examples of agreements between the trade unions and enforcement authorities. For example, in Spain trade unions also intervene to support the enforcement role of the inspectorate. In Valencia, the officials of the Construction Federation of CC.OO tour the city by car to act as an extra pair of eyes for labour inspectors. Typically, they park outside a building site, note down, while seated in the car, any obvious infractions and then report them to the inspectorate.

No reported accidents on sites visited by trade union representatives

Such an enforcement role also has more institutionalized outlets: in Valencia, trade unions have negotiated an agreement with the inspectorate whereby the latter notify the union at regional level of any improvement orders made so that the union can monitor whether the firm is taking action. In the construction sector, unions have reached agreement with local authorities to inspect public sites, such as the site of the Madrid underground. In the same region, there are agreements with local authorities for the inspection of major public building sites by trade union representatives. In the town of Gandia in 1998, 146 sites were visited on which 1,180 workers were employed. The agreement is considered to have contributed to the absence of any reported accidents on the sites and of any days lost through accidents during the year. In the city of Valencia, similar success has been achieved via an agreement with the Housing Department in respect of public housing building sites.

In *Sweden*, regional safety representatives have participated with the labour inspectorate in various ad hoc campaigns aimed at particular aspects of health and safety performance in small enterprises, such as in reducing machinery accidents in the baking industry through joint inspection campaigns and in checking containers in the transport industry.

Joint Health and Safety Committees for Small Enterprises

In most countries in Western Europe, there are examples of regional or sectoral joint safety committees that have a role in health and safety matters in small enterprises in their area. In

some cases, these committees have little more than an information distribution function. They are often involved in training initiatives in which health and safety training is commissioned, developed or delivered to small enterprise employers, workers and workers' representatives. In other cases, they may oversee the activities of regional/territorial representatives, as in the health and safety committee in construction in Asturias and the district committees in Emilia-Romagna that have already been mentioned. Occasionally, they undertake inspection themselves as is the case in the Greek statutory joint committee for shipbuilding and repair, also mentioned previously. Generally, however, they represent an infrastructural device in which stakeholders can meet to develop policies and practices on health and safety in small enterprises.

Factors which influence the success of representation on health and safety for workers in small enterprises and their relevance to agriculture

Although, in most cases, awareness of the need for special strategies on representation for workers in small enterprises in Western Europe is a relatively recent development, it should be evident from the examples in the previous section that there is already a rich variety of experience available. Analysis of such experience points to a number of factors which seem to be critical in determining the success of representation. While some of these factors reflect what is already known about the determinants of effectiveness for worker representation in health and safety in general, others are more specific to the situation of work in small enterprises.

The extent of the challenge

Clearly, industrial relations culture, the degree of union density and the attitude of owners/managers to both health and safety and worker participation are critical issues which will influence the extent of the success of strategies on health and safety representation aimed at small enterprises. These are undoubtedly variables which help to explain the success of the Swedish scheme and at the same time make clear the extent of the challenge such representation faces in other countries where social attitudes and trade union densities are less favourable. Nevertheless, evaluation of the factors influencing the success of initiatives involving the representation of workers' health

and safety interests in small enterprises by representatives from outside the workplace has shown a number of common features which are shared to a greater or lesser extent by most of these representation initiatives in Western Europe.

Issues of legitimacy and credibility

In this respect, it is clear that the task of regional/territorial representatives is different from that of traditional worker representatives operating within their own workplaces. There are major issues of legitimacy and credibility that regional representatives confront not only with owner/managers in small enterprises but also with the workers themselves. Traditional approaches to worker representation on health and safety such as the inspection and control strategies which characterize many of the approaches of internal worker representatives in larger workplaces may be counterproductive when used by regional health and safety representatives.

Need for negotiating skills and alliances

Regional/territorial representatives require representational and negotiating skills suited to the conditions of informal relations of employment that characterize small firms. These characteristics include the absence of forms of worker organization and procedural structures and arrangements for dealing with managers and their employers which are familiar to trade union representatives from large organizations. They also mean that representatives may need to form alliances with actors and organizations such as health and safety prevention services, labour inspectors, local health and safety groups, public administrators, and others with which and with whom they may be unfamiliar if their experience is based in traditional industrial relations scenarios. They may also need to make greater effort to communicate with workers in small enterprises and even with members of the public in the communities in which the enterprises operate.

Using the media

Examples of regional representative initiatives such as the Agricultural Workers' Scheme in the United Kingdom show that the representatives engage in many activities, such as speaking at local farming events and using

local or sectoral media to promulgate messages about their role in health and safety which would not be anticipated by worker representatives inside large organizations.

Major resource implications in terms of required skills

These different roles require different approaches, personal qualities and skills of the representatives themselves if they are to be successful. They may be acquired with the aid of experience and training, but it is important to recognize that there are significant resource implications inherent in the provision of the training and organization necessary to support them in this achievement. Resource allocation is also implied by the need for regional/territorial representatives to avoid becoming isolated. They require support in this respect from their regional trade union organizations as well as from the regional and sectoral committees that exist in some of the schemes previously described. Indeed, very few schemes have been developed without the injection of resources from one source or another. However, these costs should be placed in perspective. Although such resources are not insignificant and obtaining them and sustaining their supply may be a major challenge, especially in industrial sectors such as agriculture, they are relatively minor compared with the potential benefits in reducing the costs of accidents and ill health in small enterprises.

Different communication methods to win support

Another lesson that would seem to be repeated in the various schemes described previously is that they are unlikely to be successful unless they have the widespread support of the social partners, the public authorities and other stakeholders in the small business sector. Gaining such support is one of the reasons why the worker representatives need to adopt methods of communication in health and safety which may be different from those used in the forms of employment relations that are familiar in large enterprises. This presents greater challenges for some industrial sectors than others. Indeed, experience in agriculture to date would suggest that its culture and traditions may represent formidable obstacles to schemes involving worker representation. However, as the British example of roving safety representatives indicates, even marked

employer opposition can be overcome. Such hostility to the scheme at the outset has subsequently given way to cooperation in a joint scheme following demonstration of some of the benefits and potential of the original scheme.

Legislative rights seldom extend to small enterprises

Linked to institutional support of the main actors involved is the question of legislative support for the kind of health and safety interventions that use worker representation. Legislative rights for workers to be represented on health and safety, and attendant requirements for employers to make provisions to allow the election of their representatives and facilities to enable them to function, are features of most European national provisions as well as those of the EU. However, such rights rarely extend operationally to workers in small enterprises even if they exist in theory, for all of the reasons, already outlined, which make representation in individual workplaces difficult to either develop or sustain. To effect access to representation for workers in small enterprises perhaps special provisions may need to apply. This course has been resorted to by several countries, as illustrated by the examples of *Sweden*, *Norway*, *Italy* and *Greece*. There is little doubt that the widespread success of the Swedish scheme is accounted for, at least in part, by its statutory backing, or that the existence of the Italian territorial representatives, or the Greek sectoral joint health and safety committees, were stimulated by provision for their creation in legislation. From the evidence presented, it seems that schemes for worker representation on health and safety in small enterprises are greatly aided by statutory support. However, this does not mean that such statutory support is by any means the sole reason for their success.

Conclusion: the relevance of worker representation for health and safety in agriculture

Work in agriculture is dangerous. Health and safety performance is poor, and health and safety management is underdeveloped. As such, it is a cause for concern and is justifiably a target for the prevention strategies of the regulatory agencies and others involved in improving health and safety standards. However, it is a sector which does not lend itself eas-

ily to regulatory interventions. Many of the extremes of labour relations associated with small business culture are the norm in agriculture and it is largely resistant to traditional forms of autonomous collective worker organization.

Links with economic interests, market regulation, and the business environment

There is growing recognition that health and safety management in small firms in Western Europe will not be achieved by reliance on traditional command and control approaches to regulation and inspection. New approaches in which health and safety can be linked to economic interests, market regulation and the business environment in which small firms operate are becoming more widely used in efforts to improve health and safety performance in the sector. These approaches frequently make use of organizations and agencies that are part of the small business environment and from which workers, managers and owners of small enterprises have demonstrably something to gain. Trade unions can and should be part of this environment, even though they may need to modify their identities and their organizational strategies to maximize the opportunities for the representation of workers in the sector.

New possibilities of worker representation considerable

This article has demonstrated that there are forms of worker representation which fit this new awareness and which offer considerable potential for improvements in health and safety management and performance that are much needed in the agricultural sector. Access to representation on health and safety for workers in agriculture has never been easy. However, while the sector presents formidable barriers to traditional approaches to worker representation, the possibilities offered by new strategies involving different forms of regional representation are considerable. Although such schemes by no means overcome all of the obstacles to representation in the sector, experience of their development in other sectors in which small enterprises predominate, as well as of their limited application in agriculture itself, suggest many reasons to be optimistic about their development in the sector in the future.

Costs offset by gains

Such schemes need support from stakeholders and regulators and some degree of resourcing. This is no less the case in agriculture than in any other sector where small firms predominate. However, there is sufficient evidence to suggest that traditional worker representation makes a significant impact on health and safety performance and this would also be the case for schemes involving regional worker representation. The costs of such schemes are therefore small and easily offset by the economic and social gains from improved health and safety that would be achieved from their successful operation in agriculture as well as in other sectors of employment.

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Eastern Europe: Occupational health services are remote from workers and have not yet become an integral part of primary health care

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Working and living conditions of agricultural workers as well as their health largely depend on the level of economic development and the agrarian policy applied in any particular country. In the recent decade, most Eastern European nations have revised and substantially altered their key principles of agrarian policy.

In Ukraine, the Russian Federation and some other Eastern European countries, agrarian reforms have been facing a concurrent decline in agricultural output which necessarily entails further deterioration in the social and economic status of the rural population (Kross, 1998; James, 1996; Kundiev, 1994). The main conclusions which follow this analysis reflect an extremely negligent attitude towards the working and living conditions of rural people. The backwardness of the countryside in certain countries in terms of social development largely accounts for migration of rural youth to towns resulting in the ageing of the rural population and other unfavourable demographic changes.

Measures to speed up social development in the countryside

At present, the agrarian policy in many countries is evolving towards a more generalized democratization of economic life. Various forms of management are operating in the Confederation of Independent States (CIS): collective and state farms; agro-industries; agro-centres; peasant farms; and private subsidiary smallholdings. The family farm has regained its original status and leases became very popular in the countryside. These measures are designed to accelerate social development in the countryside which is considered to be the main target of the current agrarian policy. In this respect, particular attention should be paid to significant improvement of women's work-

ing and living conditions with regard to their twofold function as workers and housewives.

To make strides in agricultural development, find solutions to environmental problems and undertake major social reorganization as a whole require the active involvement of experts in many fields. A number of new and complex problems need to be urgently addressed by specialists in the areas of public health, safety and ergonomics in order to adopt policies and measures to safeguard the health and working capacity of collective and state farm workers as well as that of individual farmers.

Medical and demographic situation

A socio-economic crisis that swept most Eastern European nations has led to negative medical and demographic developments, i.e. dwindling population, lower birth rates, increasing mortality and a shorter lifespan. These consequences were most acutely felt in the countryside where they were widespread. In Ukraine alone, from 1991 to 1997, the rural population decreased by 805,000. In 1998 the rural population accounted for 16.2 million people or 32.1 per cent of Ukraine's total population (Glukanova, 1998).

All countries recognize the increased ageing of the rural population: persons beyond the productive age make up 30 per cent. The share of the able-bodied in the countryside keeps shrinking. In 1998, in Ukraine, it amounted to 49 per cent, i.e. 1,041 persons of non-productive age (young children and the elderly) per 1,000 persons of productive age. In addition, birth rates in the countryside are constantly falling: from 1990 to 1996, the birth rate (number of newborns per 1,000 of population) dropped from 12.7 to 10.7. The rural birth rate in Ukraine, Russia, Belarus and other countries in the region is below the rate of simple reproduction.

One third of injury-induced deaths in agriculture

An extremely unfavourable feature of today's medical and demographic situation is high mortality among productive age individuals, especially among males. In Ukraine, the mortality rate of this group was 1,132, or 5.5 per 100,000 of the population in 1995. The mortality rate among males of productive age is three and a half to four times higher than the rate among females.

The main causes of death among the productive age people are accidents, injuries and poisonings, blood circulation problems, and cancer. In the past five years in Ukraine, the death toll from injuries in the agricultural sector approached 3,236 or almost one-third of injury-induced deaths in all sectors in aggregate (Tkachuk, 1998). The rural death toll from injuries, poisonings and accidents among the productive age group exceeds the urban one by far (see Table 1).

Shortest ever lifespan

Most injuries occur among agricultural machine operators, stock farmers and repairmen. The main causes of injuries are working conditions which do not comply with safety requirements and hygienic standards. Operation of faulty or obsolete machinery, poor work organization, lack of skill and alcohol abuse all combine to produce the conditions in which most tractor drivers, repairmen and stock farmers work. In Ukraine alone, over 400,000 people work in conditions dangerous to health. Socio-economic hardships are often reflected by alcohol abuse. Figures show that the rural death toll from alcohol intoxication among productive age people exceeds the urban one (see Table 2).

In the nineties, in the Newly Independent States (NIS) the shortest ever lifespan in a peaceful time has been observed, equally affecting urban and rural areas (see Table 3). The Ukrainian example shows positive changes

Table 1. Mortality rates among productive age individuals from injuries, poisonings, and accidents 1993-98, per 100,000

Type of area	Both sexes			Males			Females		
	1993	1997	1998	1993	1997	1998	1993	1997	1998
Urban	159.9	177.0	162.2	268.2	296.2	273.5	48.6	54.0	49.4
Rural	200.7	212.7	200.0	326.7	346.8	328.2	55.7	57.1	52.2

Table 2. Morbidity among productive age individuals from alcohol intoxication in 1993-98, per 100,000

Type of area	Both sexes			Males			Females		
	1993	1997	1998	1993	1997	1998	1993	1997	1998
Urban	20.5	24.3	20.4	34.6	41.0	34.8	5.9	7.2	5.6
Rural	33.7	32.5	28.4	55.3	52.5	46.4	9.0	9.4	7.6

Table 3. Life expectancy in Ukraine in 1990-98 (years)

Years	Males			Females		
	All population	Urban population	Rural population	All population	Urban population	Rural population
1990	65.4	66.3	64.2	74.9	74.9	74.6
1993	63.3	63.7	62.1	73.4	73.4	73.1
1994	62.5	62.9	61.6	73.0	72.9	72.8
1995	61.3	61.4	61.0	72.6	72.4	72.6
1996	61.7	61.8	61.0	72.8	72.8	72.7
1997	62.3	62.8	61.3	73.2	73.2	73.0
1998	63.3	63.8	62.2	73.7	73.9	73.5

over the last three years: the lifespan among males increased by 1.6 years (2 in urban areas, 1.2 in rural areas), and among females by 0.9 years (1.1 in urban areas, 0.8 in rural areas). However, despite these positive developments, the lifespan among both the urban and rural population in the region remains rather short.

In 1998, the difference in the lifespan between Ukraine, Russia, Belarus and Western European nations was 10-12 years among males and 7-8 years among females, but a gradual widening of this gap is being observed, especially in rural areas. In Ukraine for example, the difference in 1990 was 8.2 years but 10.4 years in 1998 (10.1 in urban areas, 11.3 in rural areas). It may be expected, however, that the demographic situation which developed in rural areas in Eastern European countries can only improve once the worst years of the socio-economic crisis have passed, ceding place to an era where new forms of management would prevail, enhancing social protection for women and setting in place a reliable public health service.

Rural morbidity features

In recent years, most countries of the region have faced a sharp increase in tuberculosis incidence among people. According to official statistics, 8,700 rural residents in Ukraine developed tuberculosis for the first time, accounting for 53.7 cases per 100,000. As compared with 1990, the rate has risen by 37.7 per cent or is 10.7 per cent higher than in 1997.

The incidence of tuberculosis in rural communities stands at 245.9 cases per 100,000 while the urban population indicates a substantially lower rate, 217.7 cases. The growing incidence of tuberculosis among rural residents, including workers, is primarily attributed to a decline in economic living standards, deterioration of working and household conditions, a sharp reduction in health services – preventive measures in particular, an increase in stressful situations resulting from unregulated land ownership, and concern about the future.

Similarly, the steady yearly rise in the incidence of sexually transmitted diseases and AIDS among rural residents is alarming. The same causes apply as in the case of tuberculosis, but in addition the lack of rural health care has to be recognized as a key contributor: instead of investing in preventive measures, specialized rural health care services are actually being reduced due to the lack of funding from national programmes.

Cancer and Chernobyl

Oncologic morbidity has always been greater in urban areas where carcinogenic factors affecting people in their occupational and household activities were more numerous. However, the situation has recently started to change dramatically with the result that the oncologic morbidity rates in urban and rural areas are on par. In Ukraine, some years even indicated the rural rate exceeding the urban. From 1995 to 1998 the cancer incidence among rural residents has risen by 7.2 per cent. In Ukraine and in a number of other countries, this outcome is not only produced by an extensive use of chemicals in agriculture and pollution of the air with traffic fumes; it is also linked to the nuclear power sector and, in particular, to the consequences of the accident in 1986 at the Chernobyl Nuclear Power Plant.

Poor preventive measures

A degenerating lifestyle in the countryside also gives rise to more of the carcinogenic factors: tobacco smoking, sniffing and alcohol abuse have recently been catching on with the rural population. In recent years, the rate of tumour discovery as a result of preventive medical examinations has dropped severely – standing at 16.5 per cent in 1998, for example – owing to an insufficient number of such examinations, absence of screening programmes, poor quality of diagnostic facilities and the lack of skills among health workers. The mental health of the rural population is growing worse. Adolescents are increasingly tending to develop mental disorders. In Ukraine, in 1998, adolescents accounted for 781.1 cases per 100,000 of the respective age population; children 431.9 and adults 93.6. For many years chronic alcoholism has been widespread in rural communities, mainly among productive age people. In 1997, in Ukraine, this stood at 1,463.5 cases per 100,000, exceeding the urban rate of 8.9 per cent.

Jobless people most affected

An analysis of these and other official statistics yields evidence of unfavourable trends in the state of rural health as a whole, including the health of working people. To some extent, this evidence corroborates a special study (Protsek et al., 1999) conducted in Ukraine in 1998. The same study also focuses on the status of rural workers' health in other countries. It has been brought to light that the

highest level of primary morbidity in rural communities affects the jobless (1,215 cases per 1,000); then, second in rank, managerial personnel (1,121), and lastly, unskilled workers (1,118). Skilled and office workers revealed a lower morbidity rate and entrepreneurs the lowest (445 cases per 1,000). The same trend applies to disease incidence among different social groups. For example, among the jobless, the incidence was 1.5 times higher than among private entrepreneurs.

Rural workers and their children most vulnerable

A health survey of rural children from different social groups showed that children of the unemployed suffered the poorest health. The disease incidence among the latter amounted to 957 cases per 1,000; among children of unskilled workers, 922; whereas among children of managerial and office workers, 822 and 838 cases respectively. A study of morbidity among agricultural workers and their children in relation to the level and number of occupational hazards is of particular interest. The lowest rates of morbidity and chronic pathology incidence were found in a group of workers who had had virtually no contact with obvious occupational hazards. Any increase in the level and number of the hazards pushed the morbidity and incidence rates upwards. For example, a group of workers whose working conditions are very favourable in so far as they are characterized by no obvious occupational hazards, accounted for a primary morbidity rate of 628 cases per 1,000, a group with one or two hazards, 1,155, a group with other four hazards, about 2,000 cases. The trend is similar for chronic disease incidence in the different groups as well as for morbidity of children whose parents are affected by various harmful factors at work. Thus, rural workers in contact with obvious occupational hazards are the most vulnerable. To safeguard their health, special preventive measures of a medical, organizational and engineering nature are needed.

Health risk factors among agricultural workers

Agricultural production substantially differs from industrial despite industrialization and the use of scientific and technological innovations. The key feature of the sector is that its main means of production are the soil and live organisms – plants and animals. No amount of scientific or technological progress can eradi-

cate the dependence of agricultural production on the natural environment.

Certain features of agricultural production need to be underlined, as follows:

- agriculture is organized according to seasonal production schedule that accounts for a lot of strain on workers at particular times of the year. This feature is becoming increasingly evident as farming tends to move further into northern areas.
- work is done in the open air from early spring till late autumn and partially in winter. This practice necessarily has repercussions on the health of the workers owing to variable combinations of weather factors, depending on the climatic zone, time of the year and weather conditions.
- agricultural production involves a high frequency of alternating operations performed by the same individual, particularly in the case of manual operations. The scientific and technological strides in all branches of agriculture demand professional skills to perform such operations. The most common additional operations are being mechanized, with the result that the need for skilled operators is even more acute.
- the processes of agricultural production and operation cover long distances. Hence workplaces are remote from places of residence. In terms of workers' health, a considerable amount of energy is spent walking long distances of 10 kilometres and more.
- chemicals and pesticides are extensively used in agricultural production, inevitably polluting the air in the working area as well as the biosphere. In addition, a number of other biologically active substances are being used: stimulators of growth, mineral food additives, etc.

Health risk factors among agricultural machine operators include noise, vibration, unfavourable microclimatic conditions, dust and chemicals. As a rule, these factors produce a combined impact. Their intensity and duration of exposure correspond to the yearly cycle of agricultural operations (Kundiev, 1981).

A high degree of intensity and long hours of exposure, well above the allowable level, lead to a more rapid development of some health problems. For instance, tractor drivers are likely to develop occupational hearing impairment when regularly exposed to a noise level of 99 dBA

equiv. (Kundiev, Cherniuk and Vitte, 1997). Similarly, heavy manual labour poses a risk of developing locomotor problems. There is a high incidence of lumbar radiculitis among agricultural workers. Milkmaids tend to have hand diseases because of manual milking (see Figure. 1).

Health services not accessible to rural workers

Although health risk factors for rural workers are inherent in most operations they carry out, and their effect on health comparable with that in industry, the occupational diseases induced by those factors are too often not discovered.

In recent years, in Ukraine, occupational morbidity rates per 10,000 workers stood at 40.0 in the coal industry, 1.6 in the building materials sector, 1.2 in machine building, and less than 0.5 in agriculture (Kundiev et al., 1999). In other words, the official record does not reflect the reality. The fact that agriculture accounts for only 3 to 4 per cent of all occupational diseases but at the same time is the leading sector in terms of injuries, especially those with a fatal outcome, indicates that occupational health services are not easily accessible to workers in the countryside. Between 1993 and 1998, in Ukraine, the most common diseases were chronic bronchitis, hearing impairment, and diseases connected with vibration effects.

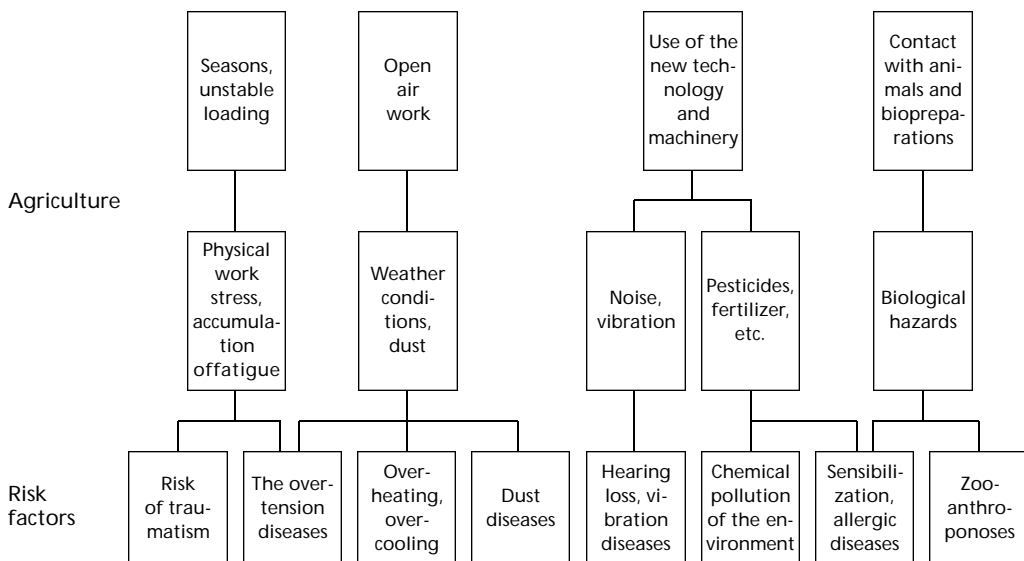
According to the Agricultural Social Insurance Fund (Solecki, 1999) in Poland, respiratory diseases lead the record (65 per cent), with farmer's lung and bird breeder's lung, bronchial asthma, and allergic diseases of the upper respiratory ducts, resulting mostly from inhaling organic dust. They are followed by zoonoses like borreliosis, tick-borne encephalitis and meningitis, toxoplasmosis and dermatomycosis. In Poland, farmers quite often developed spondylosis, arthrosis and so-called "rheumatism of soft tissues". These types of pathology fall under para-occupational diseases.

In summing up, it may be generally maintained that no Eastern European country has solved the problem of complete timely discovery of occupational diseases among rural workers. Such a situation prevails because occupational health services are remote from workers and have not yet become an integral part of primary health care.

Ineffectual measures, poor delivery

The poor state of health in rural communities and among agricultural workers throughout Eastern Europe is largely a consequence of the socio-economic crisis the nations in the region are traversing. Reversing the situation must rank high among the strategic tasks with regard to addressing the significance of this sector to the economies of the countries in the region. A grow-

Figure. 1. Occupational health problems in agriculture



ing concern, the question of the inequality of health services for urban and rural populations, ineffectual medical, social and preventive measures, and insufficient infrastructure for delivering rural health care. Some countries are reforming their rural health services by even reducing the number of rural outpatient clinics, thus making primary health care even less accessible.

Patterns of ownership

Those responsible for reforms in rural health care and their improvement programmes also ought to consider the existing variety of patterns of ownership in agriculture as well as the new ones emerging. In rural areas, the state health system is still serving as a basis. However, the involvement of medical institutions other than state-run ones should be envisaged.

The countries of the region have to base their efforts on a sustainable development concept. For agriculture, this implies a reduction in the use of harmful chemicals, a decrease in the use of arable soil, reforestation, energy conservation and waste reduction, and rational storage and processing of agricultural products. If implemented, the sustainable development concept will result in diminishing health risk factors for workers.

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A summary of findings on the basic minimum age for employment and the exceptions for light work, hazardous work, work in family undertakings, and in agriculture

The following article draws on the findings of research conducted by the Norwegian-funded workers' education project "Developing National and International Trade Union Strategies to Combat Child Labour (INT/96/M06/NOR). (See Box). The purpose of the research project was to examine legislation on child labour in agriculture and its application. In order to disseminate the findings, the second part of the original report has been summarized, providing details of the examples of legislation in different countries. The full text of the report, entitled "Child labour in agriculture: a survey of national legislation", may be obtained from the ILO Bureau for Workers' Activities.

The following findings are based on a questionnaire sent to 52 countries in Africa, 32 countries in the Americas, 33 countries in Asia and 41 countries in Europe and Central Asia. The responses to the questionnaire give an indication of the basic minimum age for employment and the exceptions for light work, hazardous work, work in family undertakings and in agriculture.

Africa

The basic minimum age for employment is 12 in Egypt, Nigeria, Sierra Leone, Sudan and Morocco; 14 in Angola, Benin, Burkina Faso, Cameroon, Cape Verde, Central African Republic, Chad, Côte d'Ivoire, Djibouti, Equatorial Guinea, Ethiopia, Guinea Bissau, Liberia, Madagascar, Malawi, Mali, Mauritania, Namibia, Niger, Rwanda, Sao Tome and Principe, Senegal, Togo and Zambia; 15 in Botswana, Comoros, Ghana, Lesotho, Mauritius, Mozambique, Seychelles, Somalia, South Africa and Libyan Arab Jamahiriya; and 16 in Algeria, Burundi, Congo, Gabon, Kenya and Tunisia.

In the case of light work, for example domestic work and light agricultural work, the minimum age is 12 in Benin, Burkina Faso, Burundi, Cape Verde, Central African Republic, Chad, Congo, Côte d'Ivoire, Malawi, Mali, Niger, Nigeria, Sao Tome and Principe, Senegal, Seychelles, Somalia, Uganda and Zimbabwe; 13 in Equatorial Guinea, Lesotho and Tunisia.

The minimum age for hazardous work is 14 in Cameroon and Ethiopia; 15 in Botswana, Egypt, Namibia and Tanzania; 16 in Cape Verde, Central African Republic, Chad, Congo, Côte d'Ivoire, Djibouti, Equatorial Guinea, Guinea, Madagascar, Mali, Morocco, Niger, Nigeria, Sao Tome and Principe, Senegal, Sierra Leone, Somalia, Sudan and Uganda; 18 in Algeria, Angola, Benin, Gabon, Ghana, Guinea Bissau, Kenya, Liberia, Malawi, Mauritania, Mauritius, Mozambique, Seychelles, South Africa, Swaziland, Togo, Tunisia, Zambia and Zimbabwe.

Exceptions are given to work in family undertakings, especially in agriculture where children as young as 12 years old are permitted to work with their parents' consent, subject to light work and restrictions. Discretionary powers are vested with regulatory authorities, e.g. the minister, to decree exceptions of this nature. Legislation, however, recognizes that employment of children must not pose a health hazard to them, or affect their normal schooling and education. It also recognizes the role of apprenticeship in the training of young workers.

Americas

The basic minimum age for employment is 12 in Costa Rica, Saint Lucia and Trinidad and Tobago; 14 in Argentina, Bahamas, Belize, Bolivia, Brazil, Colombia, Dominican Republic, Ecuador, El Salvador, Guatemala, Guyana, Honduras, Mexico, Nicaragua, Panama, Peru,

Suriname and Venezuela; 15 in Barbados, Chile, Cuba, Dominica, Haiti, Jamaica, Paraguay and Uruguay; 16 in Antigua and Barbuda.

In the case of light work, for example domestic work, light agricultural work and industrial work outside school hours, the minimum age is 12 in Belize, Colombia, Jamaica, Panama, Paraguay, Saint Lucia and Uruguay; 14 in Antigua and Barbuda, Chile and the United States.

The minimum age for hazardous work is 14 in Saint Lucia and Trinidad and Tobago; 16 in Bahamas, Belize, Guatemala, Guyana, Honduras, Jamaica, Mexico and the United States; 17 in Canada and Cuba; 18 in Argentina, Barbados, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominica, Dominican Republic, Ecuador, El Salvador, Haiti, Nicaragua, Panama, Paraguay, Peru, Suriname, Uruguay and Venezuela.

Exceptions are given for family undertakings and in the case of Argentina, the law does not apply to agrarian workers. However, restrictions include the concern for education and work for young persons is restricted to work outside school hours for parents or guardians.

Asia

The minimum age for employment is 12 in Fiji, Solomon Islands and Syrian Arab Republic; 13 in Lebanon, Saudi Arabia and Thailand; 14 in Bahrain, Bangladesh, India, Indonesia, Kuwait, Malaysia, Nepal, Pakistan, Singapore and Sri Lanka; 15 in Afghanistan, Cambodia, Iran, Iraq, Japan, Republic of Korea, Lao

People's Democratic Republic, the Philippines, Viet Nam, United Arab Emirates and Yemen; 16 in China, Jordan, Mongolia, New Zealand and Papua New Guinea.

In the case of light work, which includes domestic work, light agricultural work and industrial work, which do not affect the health, psychological development, training and education of the young persons, the minimum age for employment is 12 in Cambodia, Fiji, Japan, Singapore and Solomon Islands; 14 in Indonesia, Malaysia and Sri Lanka; 15 in the Philippines.

The minimum age for hazardous work is 16 in Bahrain, Bangladesh, Cambodia, Lebanon, Malaysia, Nepal, New Zealand, Papua New Guinea, Solomon Islands and Sri Lanka; 18 in Afghanistan, China, India, Indonesia, Iran, Iraq, Japan, Kuwait, Lao People's Democratic Republic, Mongolia, the Philippines, Saudi Arabia and Thailand.

Exceptions are given for family undertakings and for occupations in the agricultural sector.

Europe and Central Asia

The minimum age for employment is 15 in Austria, Belgium, Croatia, Cyprus, Czech Republic, Denmark, Finland, Germany, Greece, Hungary, Iceland, Israel, Italy, Kyrgyzstan, Latvia, Luxembourg, Netherlands, Norway, Poland, Russia, Slovakia, Slovenia, Switzerland, Tajikistan and Turkey; 16 in Albania, Azerbaijan, Belarus, Bulgaria, France, Ireland, Kazakhstan, Lithuania, Malta, Portugal, Repub-

Project INT/96/M06/NOR: Developing National and International Trade Union Strategies to Combat Child Labour

This project has been operational in many different sectors via the International Trade Secretariats: textile and garment, building and construction, domestic workers, tourism, diamond and gemstone, among others. In addition to its support for the production of this report, the project has been cooperating with the International Union of Food, Agricultural, Hotel, Restaurant, Catering, Tobacco and Allied Workers' Associations (IUF) in their effort to combat child labour throughout the agricultural sector in Africa in areas such as tobacco growing and tea plantations.

As of January 2000, the project began cooperating with trade unions via their national centres to develop policies and action plans for combating child labour. It also supports trade campaigns for the ratification of ILO Convention No. 182 on Eliminating the Worst Forms of Child Labour (1999) and its implementation.

The ILO Bureau for Workers' Activities has also launched another project: INT/98/M10/NOR – Action against child labour through education and training. Its aim is to involve teachers in the elimination of child labour. The Bureau is jointly implementing this project with IPEC (International Programme for the Elimination of Child Labour), with the involvement of teachers' organizations and other relevant international groups.

lic of Moldova, Romania, Spain, Sweden, the United Kingdom and Yugoslavia.

In the case of light work, which includes work performed in the school holidays and is not prejudicial to health, education and moral development, the minimum age of employment is 12 in Albania, Austria and France; 13 in Denmark, Germany, Latvia, Lithuania, Netherlands, Norway, Sweden, Switzerland and Turkey; 14 in Finland, Iceland, Ireland, Israel, Italy, Kazakhstan, Portugal and Russia; 15 in Bulgaria and Poland.

The minimum age for hazardous work is 16 in Albania, Austria, Cyprus, Denmark, Finland, France, Greece, Hungary, Israel, Switzerland and the United Kingdom; 18 in Belarus, Belgium, Bulgaria, Croatia, Czech Republic, Germany, Iceland, Ireland, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of Moldova, Romania, Russia, Slovakia, Slovenia, Spain, Sweden, Tajikistan, Turkey and Yugoslavia.

Exceptions are given for agricultural work in family undertakings and to other work subject to restrictions on the nature of work performed, hours of work, health and safety and education of the child concerned.

Conclusion

Responses to the questionnaire indicate that legislation provides for a wide latitude for minimum age of employment of between 12 and 21 and is subject to further conditions, which ensures that the health, education and moral development is not affected. Parental consent and supervision are also included in some countries. The nature of occupations and terms and conditions of employment are also restricted to suit the young workers. Apprenticeship training is particularly emphasized. Hazardous occupations are given special consideration especially in seafaring and mining occupations where the minimum age of employment is higher.

In spite of formal legislation and decrees, employment of young workers in agriculture and domestic services is subject to exceptions which render formal legislation and decrees ineffective in prevention of child labour and abuse of young workers.

The agricultural sector is the least protected economic sector with regard to utilization of child labour as liberal exceptions are provided for this sector in legislation.

Annex I

ILO Conventions and Recommendations of direct relevance to safety and health in agriculture adopted since 1919

1. Plantations Convention, 1958 (No. 110), and its accompanying Recommendation (No. 110).
2. Guarding of Machinery Convention, 1963 (No. 119), and its accompanying Recommendation (No. 118).
3. Employment Injury Benefits Convention, 1964 (No. 121), and its accompanying Recommendation (No. 121) [Schedule I amended in 1980].
4. Maximum Weight Convention, 1967 (No. 127), and its accompanying Recommendation (No. 128).
5. Labour Inspection (Agriculture) Convention, 1969 (No. 129), and its accompanying Recommendation (No. 133).
6. Minimum Age Convention, 1973 (No. 138), and its accompanying Recommendation (No. 146).
7. Occupational Cancer Convention, 1974 (No. 139), and its accompanying Recommendation (No. 147).
8. Working Environment (Air Pollution, Noise and Vibration) Convention, 1977 (No. 148), and its accompanying Recommendation (No. 156).
9. Occupational Safety and Health Convention, 1981 (No. 155), and its accompanying Recommendation (No. 164).
10. Occupational Health Services Convention, 1985 (No. 161), and its accompanying Recommendation (No. 171).
11. Safety in Construction Convention, 1988 (No. 167), and its accompanying Recommendation (No. 175).
12. Chemicals Convention, 1990 (No. 170), and its accompanying Recommendation (No. 177).

**Ratifications of ILO Conventions of direct relevance
to safety and health in agriculture**

Convention	Countries that have ratified the Convention (by June 1998)	Number of ratifications
C.110 Plantations Convention, 1958 [and Protocol, 1982]	Côte d'Ivoire; Cuba; Ecuador; Guatemala; Mexico; Nicaragua; Panama; Philippines; Sri Lanka; Uruguay.	10
C.119 Guarding of Machinery Convention, 1963	Algeria; Azerbaijan; Belarus; Bosnia and Herzegovina; Brazil; Central African Republic; Congo; Croatia; Cyprus; Democratic Rep. of the Congo; Denmark; Dominican Rep.; Ecuador; Finland; Ghana; Guatemala; Guinea; Iraq; Italy; Japan; Jordan; Kuwait; Kyrgyzstan; Latvia; Madagascar; Malaysia; Malta; Morocco; Nicaragua; Niger; Norway; Panama; Paraguay; Poland; Russian Fed.; San Marino; Sierra Leone; Slovenia; Spain; Sweden; Switzerland; Syrian Arab Rep.; Tajikistan; The Former Yugoslav Rep. of Macedonia; Tunisia; Turkey; Ukraine; Uruguay; Yugoslavia.	49
C.121 Employment Injury Benefits Convention, 1964 [Schedule I amended in 1980]	Belgium; Bolivia; Bosnia and Herzegovina; Croatia; Cyprus; Democratic Rep. of the Congo; Ecuador; Finland; Germany; Guinea; Ireland; Japan; Libyan Arab Jamahiriya; Luxembourg; Netherlands; Senegal; Slovenia; Sweden; The Former Yugoslav Rep. of Macedonia; Uruguay; Venezuela; Yugoslavia.	22
C.127 Maximum Weight Convention, 1967	Algeria; Brazil; Bulgaria; Chile; Costa Rica; Ecuador; France; Guatemala; Hungary; Italy; Lebanon; Lithuania; Madagascar; Malta; Moldova, Rep. of; Nicaragua; Panama; Poland; Portugal; Romania; Spain; Thailand; Tunisia; Turkey; Venezuela.	25
C.129 Labour Inspection (Agriculture) Convention, 1969	Argentina; Belgium; Bolivia; Bosnia and Herzegovina; Burkina Faso; Colombia; Costa Rica; Côte d'Ivoire; Croatia; Denmark; El Salvador; Finland; France; Germany; Guatemala; Guyana; Hungary; Italy; Kenya; Latvia; Madagascar; Malawi; Malta; Moldova, Rep. of; Morocco; Netherlands; Norway; Poland; Portugal; Romania; Slovenia; Spain; Sweden; Syrian Arab Rep.; The Former Yugoslav Rep. of Macedonia; Uruguay; Yugoslavia; Zimbabwe.	38

Convention	Countries that have ratified the Convention (by June 1998)	Number of ratifications
C.138 Minimum Age Convention, 1973	Albania; Algeria; Antigua and Barbuda; Argentina; Azerbaijan; Belarus; Belgium; Bolivia; Bosnia and Herzegovina; Botswana; Bulgaria; Costa Rica; Croatia; Cuba; Cyprus; Denmark; Dominica; El Salvador; Equatorial Guinea; Finland; France; Georgia; Germany; Greece; Guatemala; Guyana; Honduras; Iraq; Ireland; Israel; Italy; Jordan; Kenya; Kyrgyzstan; Libyan Arab Jamhuriya; Luxembourg; Malaysia; Malta; Mauritius; Nepal; Netherlands; Nicaragua; Niger; Norway; Philippines; Poland; Romania; Russian Fed.; Rwanda; San Marino; Slovakia; Slovenia; Spain; Sweden; Tajikistan; The Former Yugoslav Rep. of Macedonia; Togo; Tunisia; Ukraine; Uruguay; Venezuela; Yugoslavia; Zambia.	63
C.139 Occupational Cancer Convention, 1974	Afghanistan; Argentina; Belgium; Bosnia and Herzegovina; Brazil; Croatia; Czech Rep.; Denmark; Ecuador; Egypt; Finland; France; Germany; Guinea; Guyana; Hungary; Iceland; Iraq; Ireland; Italy; Japan; Nicaragua; Norway; Peru; Slovakia; Slovenia; Sweden; Switzerland; Syrian Arab Rep.; The Former Yugoslav Rep. of Macedonia; Uruguay; Venezuela; Yugoslavia.	33
C.148 Working Environment (Air Pollution, Noise & Vibration) Convention, 1977	Azerbaijan; Belgium; Bosnia and Herzegovina; Brazil; Costa Rica; Croatia; Cuba; Czech Rep.; Denmark; Ecuador; Egypt; Finland; France; Germany; Ghana; Guatemala; Guinea; Hungary; Iraq; Italy; Kazakhstan; Kyrgyzstan; Latvia; Malta; Niger; Norway; Portugal; Russian Fed.; San Marino; Slovakia; Slovenia; Spain; Sweden; Tajikistan; Tanzania, United Rep. of; The Former Yugoslav Rep. of Macedonia; United Kingdom; Uruguay; Yugoslavia; Zambia.	40
C.155 Occupational Health and Safety Convention, 1981	Bosnia and Herzegovina; Brazil; Croatia; Cuba; Cyprus; Czech Rep.; Denmark; Ethiopia; Finland; Hungary; Iceland; Ireland; Kazakhstan; Latvia; Mexico; Mongolia; Netherlands; Nigeria; Norway; Portugal; Slovakia; Slovenia; Spain; Sweden; The Former Yugoslav Rep. of Macedonia; Uruguay; Venezuela; Viet Nam; Yugoslavia.	29

Convention	Countries that have ratified the Convention (by June 1998)	Number of ratifications
C.161 Occupational Health Services Convention, 1985	Bosnia and Herzegovina; Brazil; Burkina Faso; Croatia; Czech Rep.; Finland; Germany; Guatemala; Hungary; Mexico; San Marino; Slovakia; Slovenia; Sweden; The Former Yugoslav Rep. of Macedonia; Uruguay; Yugoslavia.	17
C.167 Safety and Health in Construction Convention, 1988	Colombia; Czech Rep.; Denmark; Dominican Rep.; Finland; Germany; Guatemala; Hungary; Iraq; Lesotho; Mexico; Norway; Slovakia; Sweden.	14
C.170 Chemicals Convention, 1990	Brazil; Burkina Faso; China; Colombia; Mexico; Norway; Sweden.	7

Annex II

Other existing ILO Conventions and Recommendations relevant to agriculture adopted since 1919

1. Right of Association (Agriculture) Convention, 1921 (No. 11).
2. Workmen's Compensation (Agriculture) Convention, 1921¹ (No. 12).
3. Unemployment (Agriculture) Recommendation, 1921 (No. 11).
4. Living-in conditions (Agriculture) Recommendation, 1921 (No. 16).
5. Social Insurance (Agriculture) Recommendation, 1921 (No. 17).
6. Migration for Employment Convention (Revised), 1949 (No. 97), and its accompanying Recommendation (Revised) (No. 86).
7. Minimum Wage Fixing Machinery (Agriculture) Convention, 1951 (No. 99), and its accompanying Recommendation (No. 89).
8. Holidays with Pay (Agriculture) Convention, 1952 (No. 101), and its accompanying Recommendation (No. 93).
9. Maternity Protection Convention (Revised), 1952 (No. 103) and its accompanying Recommendation (No. 95).
10. Protection of Migrant Workers (Underdeveloped Countries) Recommendation, 1955 (No. 100).
11. Co-operatives (Developing Countries) Recommendation, 1966 (No. 127).
12. Tenants and Share-croppers Recommendation, 1968 (No. 132).
13. Medical Care and Sickness Benefits Convention, 1969 (No. 130) and its accompanying Recommendation (No. 134).
14. Rural Workers' Organisations Convention, 1975 (No. 141) and its accompanying Recommendation (No. 149).
15. Human Resources Development Convention, 1975 (No. 142) and its accompanying Recommendation (No. 150).
16. Labour Statistics Convention, 1985 (No. 160) and its accompanying Recommendation (No. 170).
17. Indigenous and Tribal Peoples Convention, 1989 (No. 169).

¹ Most of its provisions are incorporated in C.110.

**Ratifications of other existing ILO Conventions and Recommendations
relevant to agriculture adopted since 1919**

Convention	Countries that have ratified the Convention (by June 1998)	Number of ratifications
C.11 Right of Association (Agriculture) Convention, 1921	Albania; Algeria; Antigua and Barbuda; Argentina; Australia; Austria; Azerbaijan; Bahamas; Bangladesh; Barbados; Belarus; Belgium; Belize; Benin; Bosnia and Herzegovina; Brazil; Bulgaria; Burkina Faso; Burundi; Cameroon; Central African Rep.; Chad; Chile; China; Colombia; Comoros; Congo; Costa Rica; Côte d'Ivoire; Croatia; Cuba; Cyprus; Czech Rep.; Democratic Rep. of the Congo; Denmark; Djibouti; Dominica; Ecuador; Egypt; Estonia; Ethiopia; Fiji; Finland; France; Gabon; Germany; Ghana; Greece; Grenada; Guatemala; Guinea; Guyana; Iceland; India; Iraq; Ireland; Italy; Jamaica; Kenya; Kyrgyzstan; Latvia; Lesotho; Lithuania; Luxembourg; Madagascar; Malawi; Malaysia; Mali; Malta; Mauritania; Mauritius; Mexico; Morocco; Mozambique; Myanmar; Netherlands; New Zealand; Nicaragua; Niger; Nigeria; Norway; Pakistan; Panama; Papua New Guinea; Paraguay; Peru; Poland; Portugal; Romania; Russian Fed.; Rwanda; Saint Lucia; Senegal; Seychelles; Singapore; Slovakia; Slovenia; Solomon Islands; Spain; Sri Lanka; Suriname; Swaziland; Switzerland; Sweden; Syrian Arab Rep.; Tajikistan; Tanzania, United Rep. of; The Former Yugoslav Rep. of Macedonia; Togo; Tunisia; Turkey; Uganda; Ukraine; United Kingdom; Uruguay; Venezuela; Yugoslavia; Zambia.	118

Convention	Countries that have ratified the Convention (by June 1998)	Number of ratifications
C.12 Workmen's Compensation (Agriculture) Convention, 1921	Angola; Antigua and Barbuda; Argentina; Australia; Austria; Bahamas; Barbados; Belgium; Belize; Bosnia and Herzegovina; Brazil; Bulgaria; Burundi; Chile; Colombia; Comoros; Croatia; Cuba; Czech Rep.; Democratic Rep. of the Congo; Denmark; Djibouti; Dominica; El Salvador; Estonia; Fiji; Finland; France; Gabon; Germany; Grenada; Guinea-Bissau; Guyana; Haiti; Hungary; Ireland; Italy; Kenya; Latvia; Luxembourg; Madagascar; Malawi; Malaysia; Malta; Mauritius; Mexico; Morocco; Netherlands; New Zealand; Nicaragua; Norway; Panama; Papua New Guinea; Peru; Poland; Portugal; Rwanda; Saint Lucia; Senegal; Singapore; Slovakia; Slovenia; Solomon Islands; Spain; Swaziland; Sweden; Tanzania, United Rep. of; The Former Yugoslav Rep. of Macedonia; Tunisia; Uganda; United Kingdom; Yugoslavia; Zambia.	73
C.97 Migration for Employment Convention (Revised), 1949	Algeria; Bahamas; Barbados; Belgium; Belize; Bosnia and Herzegovina; Brazil; Burkina Faso; Cameroon; Cuba; Cyprus; Dominica; Ecuador; France; Germany; Grenada; Guatemala; Guyana; Israel; Italy; Jamaica; Kenya; Malawi; Malaysia; Mauritius; Netherlands; New Zealand; Nigeria; Norway; Portugal; Saint Lucia; Slovenia; Spain; Tanzania, United Republic of (Zanzibar); The Former Yugoslav Rep. of Macedonia; Trinidad and Tobago; United Kingdom; Uruguay; Venezuela; Yugoslavia; Zambia.	41
C.99 Minimum Wage Fixing Machinery (Agriculture) Convention, 1951	Algeria; Australia; Austria; Belgium; Belize; Brazil; Cameroon; Central African Rep; Colombia; Comoros; Costa Rica; Côte d'Ivoire; Cuba; Czech Rep.; Djibouti; El Salvador; France; Gabon; Germany; Grenada; Guatemala; Guinea; Hungary; Ireland; Italy; Kenya; Malawi; Malta; Mauritius; Mexico; Morocco; Netherlands; New Zealand; Papua New Guinea; Paraguay; Peru; Philippines; Poland; Senegal; Seychelles; Sierra Leone; Slovakia; Spain; Sri Lanka; Swaziland; Syrian Arab Rep.; Tunisia; Turkey; Uruguay; Zambia; Zimbabwe.	51

Convention	Countries that have ratified the Convention (by June 1998)	Number of ratifications
C.101 Holidays with Pay (Agriculture) Convention, 1952	Algeria; Antigua and Barbuda; Austria; Barbados; Belgium; Belize; Brazil; Burundi; Central African Rep.; Colombia; Comoros; Costa Rica; Cuba; Djibouti; Ecuador; Egypt; France; Gabon; Guatemala; Hungary; Israel; Mauritania; Morocco; Netherlands; New Zealand; Paraguay; Peru; Poland; Saint Lucia; Senegal; Sierra Leone; Spain; Suriname; Swaziland; Syrian Arab Rep.; Tanzania; United Republic of (Tanganyika).	36
C.103 Maternity Protection Convention (Revised), 1952	Austria; Azerbaijan; Belarus; Bolivia; Bosnia and Herzegovina; Brazil; Chile; Croatia; Cuba; Ecuador; Equatorial Guinea; Ghana; Greece; Guatemala; Hungary; Italy; Kyrgyzstan; Libyan Arab Jamahiriya; Luxembourg; Moldova, Rep. of; Mongolia; Netherlands; Poland; Portugal; Russian Fed.; Slovenia; Spain; Sri Lanka; Tajikistan; The Former Yugoslav Rep. of Macedonia; Ukraine; Uruguay; Uzbekistan; Yugoslavia; Zambia.	35
C.130 Medical Care and Sickness Benefits Convention, 1969	Bolivia; Costa Rica; Czech Rep.; Denmark; Ecuador; Finland; Germany; Libyan Arab Jamahiriya; Luxembourg; Norway; Slovakia; Sweden; Uruguay; Venezuela.	14
C.141 Rural Workers' Organisations Convention, 1975	Afghanistan; Austria; Brazil; Burkina Faso; Costa Rica; Cuba; Cyprus; Denmark; Ecuador; El Salvador; Finland; France; Germany; Greece; Guatemala; Guyana; Hungary; India; Israel; Italy; Kenya; Mali; Malta; Mexico; Netherlands; Nicaragua; Norway; Philippines; Poland; Spain; Sweden; Switzerland; United Kingdom; Uruguay; Venezuela; Zambia.	36

Convention	Countries that have ratified the Convention (by June 1998)	Number of ratifications
C.142 Human Resources Development Convention, 1975	Afghanistan; Algeria; Argentina; Australia; Austria; Azerbaijan; Belarus; Bosnia and Herzegovina; Brazil; Cuba; Cyprus; Czech. Rep.; Denmark; Ecuador; Egypt; El Salvador; Finland; France; Georgia; Germany; Greece; Guinea; Guyana; Hungary; Iraq; Ireland; Israel; Italy; Japan; Jordan; Kenya; Korea, Rep. of; Kyrgyzstan; Latvia; Lithuania; Mexico; Netherlands; Nicaragua; Niger; Norway; Poland; Portugal; Russian Fed.; San Marino; Slovakia; Slovenia; Spain; Sweden; Switzerland; Tajikistan; Tanzania, United Rep. of; The Former Yugoslav Rep. of Macedonia; Tunisia; Turkey; Ukraine; United Kingdom; Venezuela; Yugoslavia.	58
C.160 Labour Statistics Convention, 1985	Australia; Austria; Azerbaijan; Belarus; Bolivia; Brazil; Canada; Colombia; Cyprus; Czech Rep.; Denmark; El Salvador; Finland; Germany; Greece; Guatemala; India; Ireland; Italy; Korea, Rep. of; Kyrgyzstan; Latvia; Mauritius; Mexico; Morocco; Netherlands; Norway; Panama; Poland; Portugal; Russian Fed.; San Marino; Slovakia; Spain; Sri Lanka; Swaziland; Sweden; Switzerland; Tajikistan; Ukraine; United Kingdom; United States.	42
C.169 Indigenous and Tribal Peoples Convention, 1989	Bolivia; Colombia; Costa Rica; Denmark; Guatemala; Honduras; Mexico; Netherlands; Paraguay; Peru.	10