

# Health Problems in Industrialized Agriculture\*

S. J. AXELROD, M.D., M.P.H., F.A.P.H.A.

*School of Public Health, University of Michigan, Ann Arbor, Mich.*

THE extent to which agriculture has become industrialized is seldom realized. Concentration of land ownership, the introduction of mechanization, specialization of crops, and readily available transportation are all serving to bring about an industrial revolution on the farm.

Since 1910, the proportion of farms of 500 acres and over has increased sharply. As a result, in 1940, only slightly more than 4 per cent of our 6 million farms accounted for almost half the nation's total farm acreage. While the mechanical cotton picker is perhaps the most dramatic application of technology, the ubiquitous tractor, the sugar beet loader, and the potato harvester are other evidences of the mechanization of agriculture.

These developments have converted an important segment of our agricultural economy to large-scale specialized crop production. With many types of specialized crops, there are sharp peaks of labor requirements. Most of this labor is furnished by the employment of local workers for pay and by the unpaid work of members of the farm family. If the farm crops of this country are to be harvested, however, it is necessary that of the total hired farm labor force of 4 million, some 600,000 workers leave their homes for periods varying from several weeks to 7 or 8 months to work in areas that have seasonal farm labor

needs so high that sufficient workers cannot be recruited locally.

In the United States, there are 56 well defined major areas requiring such outside labor. These areas are located in 44 of the 48 states, and involve about 1,000 of our 3,070 counties. Workers and their families follow six major migratory patterns: The Atlantic coastal, the central, the Great Plains wheat, the Texas to the sugar beet areas, the Texas-New Mexico-Arizona cotton, and the Pacific coastal. It is likely that the number of seasonal migratory farm workers will increase, since mechanization is making it possible for the farm operator to plant and cultivate acreage that can be harvested only with the help of such workers.

Studies by the Public Health Service and the Department of Agriculture have revealed the tremendous burden of disease and disability carried by the migrants following the crops. In great measure the cause of this heavy toll of ill health is to be found in the poverty of these workers, the insanitary rural slums where most migrants make their homes, and their difficult working conditions. Public health and welfare medical services are especially meager in those areas where the concentration of migrants is often the heaviest—the 40 per cent of the counties without the services of full-time local health departments. Moreover, residence requirements and local settlement laws make it frequently impossible for migrants to receive even such public health and wel-

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fare medical services as are available to local residents.

The disadvantaged position in which the industrial farm worker finds himself regarding the protection of his health as a worker is illustrated by a consideration of workmen's compensation. Farm labor is certainly no less hazardous than other types of employment covered by compensation acts. Nonetheless, agricultural employment is excluded from obligatory coverage for protection against work-connected disability and the resulting costs of medical care. In 24 states voluntary coverage of farm workers is allowed but because commercial insurance rates for this type of coverage are relatively high, it is seldom carried. Eleven states specifically disallow workmen's compensation for farm workers, even on a voluntary basis. Seven states allow certain limited coverage with numerous qualifications. Only in 5 states is the farm worker specifically covered by legislation, and even in these states there are numerous limitations and escape clauses.

Occupational diseases of workers in industrialized agriculture can be reviewed only briefly at this time. As with workers in other industries, the farm worker suffers from industrial accidents, toxic exposures, and occupational dermatoses.

In 1946 as in previous years, data from all industrial groups show that the largest number of occupational deaths, 4,500, occurred in agriculture. Because of the large number of workers engaged in agriculture, the death rate of this group was not the highest among the major industries. It was, however, 74 per cent above the average and was exceeded only by the rates for mining and construction. Further, agriculture was the only one of the major industrial groups that had a higher death rate in 1946 than in the previous year.

An analysis of the causes of accidents in 1945 among 50,000 farm laborers un-

der supervision by the U. S. Department of Agriculture revealed that farm machinery and the handling of tools were the major causes of farm accidents. The tractor, one of the most useful pieces of modern farm equipment, was found to be a prolific source of accidents. The mishandling of sugar beet topping knives, hoes, pitchforks, cane cutting knives, and other hand tools accounted for about a third of the work-connected injuries. For this group of 50,000 workers, it was estimated that 9 per cent of all cases of illness were due to accidental causes and 3.1 man-days per 1,000 man-days of employment were lost through injuries.

In the field of accident prevention, as in workmen's compensation, there may be seen the disparity in the organization of services available for the protection of the farm worker as compared with similar services in manufacturing. Industrial safety programs, while far from complete, have been increasingly applied to protect industrial workers from disease and injury. On the other hand, the paucity of such efforts on behalf of farm workers is striking.

In regard to toxic exposures, lead poisoning among workers in apple orchards has been called to the attention of industrial hygienists by the occurrence of several "epidemics." Methyl bromide used in processing figs has been reported as the cause of severe intoxication. Chemical fertilizers such as anhydrous ammonia may cause serious poisoning and pesticides used as plant sprays create a hazard to the farm worker either in the process of spraying or of harvesting.

A large number of newly developed organic chemicals has been introduced to farming. Many of them are exceedingly toxic and represent a potential hazard to agricultural workers. Thus, for example, there was recently reported the death of 1 agricultural worker and the serious illness of 5 others resulting

from overexposure to ethylene chlorhydrin, a chemical used in a process which causes seed potatoes to sprout rapidly.

Many of the specific irritants responsible for the occupational dermatoses seen in industrialized agriculture are known, and long lists of such substances have been published. For example, there have been described "corn rash," hop pickers' dermatitis, a dermatitis due to the handling of citrous fruits and carrot handlers' dermatitis, to mention only a few. Other skin disorders seen in agricultural workers such as the "muck sores" of the Florida Everglades are recognized locally. In passing, the high occurrence of cancer of the skin in the rural South which is of interest in exploring possible environmental and occupational factors in the etiology of this disease should be mentioned.

Unpublished reports of the U. S. Department of Agriculture's Office of Labor indicate that muscle strain of the lower back, legs, and shoulders was a relatively important cause of occupational disability among the farm workers under medical supervision by that agency. In view of the long hours of work in the fields and the severe muscular exertion of stoop labor, the occurrence of this type of disability is not unexpected. In this group of disorders, there has been described a tenosynovitis of the hands of cotton pickers, which occurs early in the picking season, as a specific occupational disease.

While it is true that our professional attention has been largely directed to occupational injuries and diseases among workers in industrialized agriculture, as with other industrial workers, these disabilities by no means constitute the bulk of the health problems of these many men, women and children. Studies of absenteeism among industrial workers, other than agricultural, have demonstrated that about 90 per cent of their

disabilities are non-occupational in origin, and that for every day lost due to industrial diseases and accidents, 15 are lost as the result of ordinary day-to-day adult illnesses.

Comparable data for workers in industrialized agriculture are not available. The most adequate information relating to the non-occupational disability of farm workers—that from the U. S. Department of Agriculture's Office of Labor—reveals that there is a similar distribution of occupational and non-occupational disease. For the agricultural workers under medical supervision by that agency in the four year period 1943 to 1947 approximately 352,000 cases of illness received physicians' care. This represents an incidence of all illness of 1,086 cases per 1,000 workers per year. Over 50 per cent of these cases can be considered to be non-occupational in origin, if the unsatisfactory housing and insanitary environmental conditions so frequently associated with industrialized agriculture can be dissociated from the occupation itself. In terms of day-to-day illnesses requiring physicians' services, 98,000 of the 352,000 cases of illness, or about 28 per cent, were respiratory; 51,000, or about 14 per cent, digestive in origin, and 37,000, or about 11 per cent, infectious.

Recurring and frequent upper respiratory infections were found to be associated with the overcrowded, poorly heated, and poorly ventilated housing accommodations of many farm workers. Digestive disturbances, for the most part diarrheas, resulted in many instances from inadequate refrigeration and other poor food handling practices. In mass feeding the practice of making up sandwiches the previous night to be consumed in the field the following day, was the contributing cause of several large outbreaks of food poisoning.

Two-thirds of all infectious diseases were venereal in origin and, although

the control of venereal diseases among workers in urban industry has aroused considerable attention, effective measures have not been applied to industrialized agriculture. There are of course, a few notable exceptions such as the state-wide venereal disease program for migrant farm workers in New Jersey and the mass blood testing of farm workers in Idaho.

The relationship between economic and occupational status and tuberculosis rates has not been as sharply delineated for workers in industrialized agriculture as it has for other occupational groups. X-ray surveys of workers in areas where industrialized agriculture has reached its highest stage of development indicate, however, that x-ray evidence of tuberculosis is found about twice as frequently as among the general population.

Health problems of farm workers in industrialized agriculture must be

viewed against the background of the far-reaching social and economic changes that have taken place. For these workers agriculture is no longer a "way of life" but a part of the industry of the nation. The occupational disabilities of agricultural workers require that industrial physicians, industrial hygiene and safety engineers extend the application of preventive medical technics to workers in the agricultural industry. I should like however, to emphasize the important role of *non-occupational* disease as a cause of disability among workers in industrialized agriculture. Indeed, if a satisfactory industrial hygiene for agricultural workers is to be achieved, efforts must be directed toward the provision of adequate medical services for all workers in industrialized agriculture. There is particular need for such services for seasonal migratory farm workers.

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## "Oscars" for Safety Films

The National Committee on Films for Safety recently announced its 1948 "Oscars" for films making outstanding contributions to safety.

The four motion pictures and two sound slide films, that received awards, together with their classification and producers are:

### Motion Pictures

- "Then It Happened"—general safety—Forest Service, U. S. Department of Agriculture
- "The Safest Way"—traffic safety—Pennsylvania State College for the American Automobile Association
- "This Way Out"—occupational division—American Airlines
- "Driven to Kill"—for theater showing—Sound Masters Inc., for the American Transit Association

### Slide Films

- "Award to the Wise"—traffic safety—Paragon Pictures for the Zurich Insurance Companies

"Helping Hands—Electrical Hand Tools"—occupational division—Paragon Pictures for the Zurich Insurance Companies

In addition, honorable mention or special commendation was given to "Wheel Sense," "Falling Timber," "Ski Tips," "Saga of Sawdust Sam," "Let's Stop and Go Safely," and "Lifelines." Further information about these is available from the National Safety Council, 20 N. Wacker Drive, Chicago 6.

The National Committee on Films for Safety, sponsored by the National Safety Council, includes representatives from 20 national organizations with an interest in safety. H. E. Kleinschmidt, M.D., administrator of health services, North Atlantic Division of the American Red Cross, represents the American Public Health Association.