

# An Overview of the Ohio Migrant Farmworker Safety Needs Assessment

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## Abstract

A two-phase safety needs assessment was conducted to provide baseline data on why migrant farmworkers are at a high risk of injury and illness in Ohio. In Phase 1, researchers interviewed 106 migrant farmworkers at clinics, labor camps, and job sites. Information concerning demographics, safety training, and incidence of occupational injury and illness was solicited in both English and Spanish. In Phase 2, a mailed questionnaire was administered to employers in four different agricultural sectors to collect information concerning: operation demographics; implementation of safety preventative measures; and incidence of occupational injury and illness among workers. Findings indicate that the predominately Hispanic migrant farmworkers surveyed are not receiving standardized, adequate safety and health training.

*Keywords.* Migrant worker, Safety, Needs assessment.

Agriculture is one of the three most hazardous industries in the United States today. Although agricultural workers account for less than 3% of the work force, they suffer nearly 14% of work-related deaths (National Safety Council, 1993). The migrant work force is highly vulnerable in that there may be little or no training in safety, and English language skills may be at low levels (McCurdy, 1994). Poor education, language barriers, and the transient nature of the work probably also increase risk. In 1985, the Office of Migrant Health estimated that there are between 1.0 to 2.7 million migrant and seasonal farmworkers (Rust, 1990). Slesinger and Ofstead (1993) make the distinction between migrant and seasonal farmworkers, in that, while both perform the same tasks, seasonal farmworkers live at home year-round while migrant farmworkers move around the country in search of farm work. The difficulties in obtaining an accurate count of the migrant population has been attributed to several factors: the absence of a uniformly accepted definition of migrant and seasonal farm work; the highly mobile nature of this population; their frequent movement between Mexico and the United States; seasonal changes in location of farm work and the farmworker population; remote locations of the camps or worksites; language barriers; and the desire of many immigrant workers to avoid contact with government agencies (Mobed et al., 1992).

Some examples of the occupational injuries and illnesses farmworkers experience include: fractures resulting from falls from ladders or equipment; sprains and strains

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from prolonged stooping, heavy lifting and carrying; amputations and lacerations from entanglement in machinery; pesticide poisoning; dermatitis from exposure to plants and pesticides; traumatic injury by tractor or vehicle accidents; eye injuries; and heatstroke, hypothermia or frostbite (Murphy, 1992). Many of the migrant safety and health problems can be traced back to hazardous working conditions, substandard living conditions, poor nutrition, intermittent medical assistance, and lack of potable water and sanitation facilities in the field or grove. As a result, the average life expectancy of a migrant farmworker is 49 yrs, in comparison to the national average of 75 yrs (Wilk, 1986).

Migrant farmworkers in Ohio provide a valuable service in the cultivation, harvesting, and processing of vegetables, fruit, and nursery products. In 1993, approximately 10,360 workers (ages 14 yrs or older) were employed as migrant farmworkers. Roughly 73,000 acres of labor-intensive crops were harvested, valued at over \$1.3 million (Migrant Ombudsman, 1993). Relying heavily upon migrant labor, Ohio is one of the top producers of processed tomatoes and pickle cucumbers in the United States. Working in 36 counties, migrant workers also plant, prune, and harvest apples, lettuce, flowers, and other labor-intensive nursery fruit and vegetable crops.

The first of its kind in Ohio, the Ohio Migrant Farmworker Safety Needs Assessment was conducted to examine specific safety-related characteristics of the migrant workforce, including the type and content of formal worker safety training administered by migrant employers.

## Methods

This two-phase, cross-sectional study consisted of a mailed employer questionnaire and an employee interview administered during peak season in June, July, and August. Four agricultural sectors were identified as major employers of migrant farmworkers in Ohio: 1) vegetable production; 2) fruit production; 3) fruit and vegetable packing houses; and 4) wholesale nursery production.

As there was no formal list of migrant employers available, the location of the migrant workers and interview sites first had to be determined. A list of growers who operated licensed labor camps in 1993 was obtained from the Migrant Ombudsman at the Ohio Bureau of Employment Services. In addition, member lists were obtained from the Ohio Vegetable and Potato Growers Association, the Ohio Fruit Growers Society, the Ohio Nursery and Landscaping Association, and the Ohio Farm Bureau. In order to verify whether these individuals were currently employing migrant farmworkers, a self-disclosure postcard with an accompanying cover letter was mailed. The letter requested that the growers check the appropriate box on the stamped return postcard, stating if they employed migrant farmworkers at their operation. By tracking respondents, the researchers were able to pinpoint the geographical location of high concentrations of migrant workers.

### Employee Interview

The employee interview of the Ohio Migrant Farm Worker Safety Needs Assessment solicited migrant workers' responses concerning safety awareness, training received, and incidence of injury or illness. Depending upon the product and time of season, migrant workers may be involved in planting, cultivating, harvesting, processing, and packaging of fruit, vegetables, and nursery products.

The actual interview consisted of 41 open-ended questions emphasizing four areas: 1) demographics; 2) work history; 3) safety training and awareness; and 4) incidence of occupational injury and illness. Employee interviews (N = 106) were conducted during peak harvest in June, July, and August 1994. Due to drastic budgetary constraints and difficulties in gaining access to migrant workers, interviews were conducted at the Fremont Migrant Rest Center, two migrant health clinics, and eight employer labor camps in Northern and Central Ohio. Special care was taken to utilize a non-threatening, conversational style, explaining the purpose of each section of questions in a friendly, non-condescending manner. Putting interviewees at ease by using common Spanish jargon, the interviewer encouraged participants to ask questions, describe experiences, or elaborate upon their answers.

An important goal of the needs assessment was to construct a profile of the typical Ohio migrant farmworker. Demographic information was gathered, including age, gender, homebase location, and education level. Focusing upon what hazards the individual may face every day on the job, the interviewer asked participants what type(s) of crops they worked with, what task(s) they performed, and the degree of worker safety and health training received while working in Ohio (i.e., training topic, type of format and materials used, characteristics of trainer, number of times training was provided in a season, and perceived quality of training by migrant farmworker). Final questions examined the incidence of occupational injury and illness reported by the migrant farmworkers.

As a courtesy to those individuals who either did not feel comfortable speaking with the interviewer or preferred to write their own responses, a copy of the survey and pencils were also available. In the interview booklet, both the directions and questions were provided in English and Spanish. Several individuals surveyed at the migrant clinic locations preferred to write their own responses and specifically asked for an English-only version.

Each interviewer was fluent in colloquial Spanish and had experience in working with rural Hispanic populations. In order to avoid interviewer bias, a formal interviewer training module was developed and administered. In addition to the standard interviewer script, the training module addressed critical need for brevity, participant privacy, definitions of agricultural safety terms (i.e., contact dermatitis), developmental explanation for each question, and further suggestions to improve clarity and response rate.

The content validity of the interview instrument was evaluated by a panel of safety experts and in a pilot test involving 12 migrant workers at the Migrant Rest Center in northwestern Ohio. An evaluation form was distributed to both the pilot participants and interviewers gathering feedback on readability, level of comprehension, and appropriateness of terms. Based upon these comments, the interview instrument was modified to include both English and Spanish translation of agricultural terms, an expanded script for the interviewer to further explain the purpose of the needs assessment, and specific colloquialisms used by workers.

### **Employer Questionnaire**

The second phase of the needs assessment involved a mailed questionnaire to employers to assess migrant safety and health issues. Following Dillman's Total Design Method (1978), the Migrant Employer Mailed Questionnaire (N = 84) included an initial explanatory cover letter and formal questionnaire booklet, a follow-up reminder postcard, and a follow-up letter with an enclosed survey booklet. The instrument consisted of four sections soliciting information concerning operation demographics, implementation of safety preventative measures

Table 1. Location of off-season homebase\* (Nw = 106)

Location	Participants (No.)	Participants (%)
Texas	53	50
Florida	17	16
Mexico	34	32
No homebase	2	2

\* Residence when not employed as a migrant farmworker.

(e.g., worker safety training), incidence of occupational injury and illness, and perceived effectiveness and importance of certain safety interventions. Eighty-four of the 110 questionnaires were completed and returned, providing a 76% return rate. Due to monetary constraints, no efforts were made to improve upon this rate or to collect information from non-respondents for comparative purposes.

The content validity of the interview instrument was evaluated through a review by an expert panel of safety professionals and cooperative grower association representatives. The panel was asked to evaluate for comprehensiveness, content, readability, level of comprehension, and appropriateness of terms.

## Results

### Employee Interview

**Sample Demographic Information.** Over 99% of the migrant farmworkers interviewed were young and Hispanic with an average age of 32 yrs. Over 50% of the participants were under 21 yrs of age, reflecting the vigor and resilience required for planting, harvesting, and packing crops. Of the 106 migrant farmworkers interviewed, 70% were men. As indicated in table 1, fifty percent of the workers interviewed indicated that their homebase—where they returned each year at the end of the season—was located in Texas. The remainder of the participants who returned to a homebase originated either from Florida or Mexico. (A very small percentage replied that they had no permanent homebase, but instead travelled all year round from one job to the next).

Over half of all men (59%) and half of all women (50%) reported working in the fields or groves with their parents when they were children. However, it is uncertain whether all respondents were referring to work on their home farms or as a family unit employed by a grower either in the United States or Mexico. This distinction was not made during the interview.

A unique characteristic of the migrant labor force was that many travel from job to job in groups, usually as family units. In 1993, there were 150 registered agricultural labor camps in Ohio (Ohio Migrant Ombudsman, 1993). The majority of the workers in the sample reported living in employer-provided agricultural labor camps (71%), while the remainder lived in rented houses (18%), apartments (4%), or the Migrant Rest Center (6%). Of the 47 interviewees who indicated that they brought young children with them to Ohio, over half of these parents or guardians (60%) took advantage of child care services outside of the home, while 38% reported that someone (e.g., adult, sibling or friend) cared for them at home. A few workers (6%) reported that they took their children with them to work.

**Education Level.** There were considerable differences between the education level and English fluency of the participants. Although the educational background of the typical Ohio migrant worker ranged from no formal schooling to several years of college, the average number of years completed was six years. Approximately 25%

**Table 2. Percentage of workers performing specific migrant-related tasks during 1994  
(Nw = 106 workers)**

Major Task	Participants (No.)	Participants (%)
Harvesting	54	51
Hoeing	26	24
Planting	12	11
Pesticide applicator	8	8
Driver	5	5
Staking	4	4

of the respondents were functionally illiterate (those who completed fewer than five years of school). Only 40% of the participants reported they "could speak English well". Of the 34 individuals who immigrated from Mexico, 14 stated that although they had received no formal English instruction, they "picked up" certain English phrases at the worksite or labor camp. Only 26% of the interviewees confirmed that they could read and write English. A small percentage (1%) indicated that they did not speak or read Spanish.

**Length and Type of Employment.** The average number of years migrants had been coming to Ohio was 3.9 yrs. Respondents had worked as migrants from less than a week to 70 yrs. Although the average number of years participants had been working as migrants was approximately eight years, the most frequent response from participants was less than one year (50%). Working in the field, orchard or nursery is often a monotonous and back-breaking job requiring great physical strength and stamina. Surprisingly, with the exception of the nursery industry, the percentage of migrant men (56%) and women (44%) employed were almost evenly divided. Although it was observed by interviewers that many women performed less strenuous tasks (e.g., sorting or bunching), many women reported that they worked in the field or orchard either planting or harvesting with the men. Interviewees (and employers who were personally contacted) indicated that it was common practice for workers to move back and forth between industry groups (e.g., fruit and vegetable), depending upon the season and availability of crops. As shown in table 2, the three most common tasks performed by respondents were harvesting (51%), hoeing (24%), and planting (11%).

**Occupational Injuries and Illnesses.** An objective of this needs assessment was to identify the magnitude and nature of job-related injury and illness of migrant workers. Of the 106 migrant farmworkers interviewed, 10 (9%) stated that they had suffered one or more occupational illnesses while working in Ohio during the previous three seasons. Skin irritations (e.g., dermatitis) and eye problems accounted for over 73% of the illnesses (table 3). Similarly, 12 workers (11%) reported one or more occupational injury during the previous three years. The three most common types of injuries were 1) sprains and strains, 2) cuts, contusions, and lacerations, and 3) fractures (table 4). Back injuries accounted for 50% of the injuries (table 5).

**Table 3. Number of occupational illnesses reported by migrant farmworkers  
(Nw = 10 workers) during the previous three years**

Occupational Illnesses	Reported Cases (No.)
Eye problems	4
Skin irritations	7
Heat-related illness	2
Gastrointestinal distress	1
Carpal tunnel syndrome	1

Table 4. Type of occupational injury reported by migrant farmworkers (Nw = 12 workers) during the previous three years

Type of Injury	Reported Cases (No.)
Sprains and strains	15
Cuts, contusions, and lacerations	5
Fractures	4
Burn, high temperature	1
Burn, chemical	1

Table 5. Part of body injured as reported by migrant farmworkers (Nw = 12 workers) during the previous three years

Part of Body Injured	Reported Cases (No.)
Back	13
Arm	1
Hand	5
Leg	1
Feet	3
Head	2
Eyes	1

Agricultural machinery and overexertion (e.g., lifting heavy loads) were the leading sources of occupational injuries (69%). The average time lost due to an injury was 20.5 d, ranging from 150 d to four hours. During the interview, "occupational injury" and "occupational illness" were defined as either an injury or illness resulting from an accident that occurred while the worker was on the job. Special efforts were made to delineate between worksite accidents and those which occurred at the labor camp, home, or in-transit.

#### Employer Questionnaire

**Characteristics of Migrant Employers.** The purpose of the mailed questionnaire was to gather information about agribusinesses that employ migrant farmworkers. Of the 84 respondents, 46 were classified as vegetable growers, 14 as fruit growers, 5 as nursery producers, and 9 as fruit or vegetable packers. The use of migrant labor varied considerably between industry groups. While participants in the Vegetable Group reported the highest average number of migrant employees (Mean =  $58 \pm 9$  workers), followed by the Packing House Group (Mean =  $42 \pm 10$  workers), the Fruit Group (Mean =  $12 \pm 2$  workers) and Nursery Group (Mean =  $12 \pm 3$  workers) employed considerably fewer. The Vegetable Group reported hiring the highest percentage of women (35%), while the Nursery Group hired the least (7%). The tasks migrants perform within each group are summarized in table 7.

Of the 84 respondents, 19 (26%) reported they contract migrant labor through independent crew leaders. An indicator of the degree of direct supervision received by workers, the span of control is defined by Rinefort (1985) as the number of hourly workers per manager. Each manager at the fruit operations supervised 40 workers; similarly the span of control at vegetable and packing house operations was 35.5 and 30.5, respectively. Surprisingly, the typical nursery manager supervised only 10 workers.

**Characteristics of Migrant Safety and Health Programs in Ohio.** In addition to how they utilized migrant labor in 1993, each group differed in the type of safety interventions they implemented to protect their migrant workers from injury or

**Table 6. Causative agent of injury as reported by migrant farmworkers (Nw = 10 workers) during the previous three years**

Causative Agent	Reported Cases (No.)
Machinery-related	9
Heavy load (e.g., overexertion)	9
Fall (e.g., same/different level)	5
Steam cooker	1
Detergent	1
Knife	1

**Table 7. Percentage of four major employer groups (vegetable, fruit, packinghouse, nursery) utilizing migrant labor for specific tasks in 1994 (Ne = 84)**

Specific Task	Vegetable (%) (N = 46)	Fruit (%) (N = 14)	Packing (%) (N = 9)	Nursery (%) (N = 15)
Planting	85	7	100	80
Hoeing	93	14	90	73
Harvesting	100	93	100	73
Tractor operation	44	14	56	48
Pest. application	0	0	0	20
Clean-up	28	7	34	20
Forklift	17	7	34	20
Other*	15	27	22	40

\* Includes: sorter, cooker, boxer, truck driver, palletizer, and other machinery operation.

illness. Of the 84 respondents, 64 (76%) completed the section of the questionnaire soliciting safety program information. (Due to monetary constraints, no effort was made to contact those individuals who did not respond). Almost all (96%) reported that their own staff developed and maintained a formal safety and health program. However, less than one-quarter (17%) reported that this safety program included formal employee training. Over 44% (37) of the employers stated that written safety rules, regulations, and company policies were readily available to all employees. Of these 37 employers, 30 indicated that both English and Spanish versions of this information were available. Less than 18% of the respondents read the company safety rules, regulations, and policies to their migrant workers. The majority reported that the owner (36%) conducted the safety training (table 8). This differs from the responses of the migrant workers who stated that crew chiefs (35%) played a larger role in worker training.

A comparison was also made of the differences in characteristics of safety training reported by the employers and migrant workers. Employers utilized three types of training: pairing an inexperienced worker with a skilled employee (41%); one-on-one demonstration (31%); and group meetings (20%). However, those migrant workers who received training reported only one-on-one (73%) and pairing an inexperienced worker with a skilled employee (28%). Half of the migrant workers interviewed stated that they had worked as a migrant in Ohio for less than a year. Approximately 47% of the migrant employers who provided formal training reported including special training for new employees. But, descriptions of this special training varied considerably, such as "explain their job function", "show them how to do things", "just take a little more time to make sure they understand". The type of reported training materials used (e.g., slides, demonstration, video, pictures) varied considerably among those who confirmed formal training (table 9).

**Table 8. Percentage of worker (Nw = 106 workers) and employer (Ne = 84 employers) responses concerning who conducts the formal employee training**

Person Conducting Training	Worker Responses		Employer Responses	
	Workers (No.)	Workers (%)	Employers (No.)	Employers (%)
Owner	14	13	30	36
Supervisor	8	8	25	30
Crew chief	37	35	17	20
Safety personnel	0	0	2	2
Outside source	2	2	2	2
No formal training	55	52	50	60
No response	0	0	20	24

**Table 9. Comparison of worker (Nw = 106 workers) and employer (Ne = 84 employers) response concerning type of training materials used in formal training**

Type of Training Material Used	Worker Responses		Employer Responses	
	Workers (No.)	Workers (%)	Employers (No.)	Employers (%)
Demonstration	6	12	5	6
Photos	3	5	0	0
Line drawings	0	0	1	1
Slides	3	56	1	1
Video	9	18	2	2
Written materials	3	6	4	5
None used	26	51	1	1
No safety training	55	52	50	60
No response	0	0	20	24

In order to gain a clearer picture of what safety information was disseminated, a comparison of specific safety topics cited by both migrant workers and employers was determined (table 10). The most common safety topics reported by migrant workers was "How To Do The Job Safely - Explaining Safety Rules", "Hazard Communication", and "Manual Lifting". No migrant workers received instruction in how to prevent skin cancer or perform Cardiopulmonary Resuscitation (CPR). The most common safety topics cited by employers were "How To Do The Job Safely - Explaining Safety Rules", "Tractor Safety", and "What To Do In Case Of An Emergency". The least common were "How To Use and Maintain A Respirator", "Heat-Related Hazards", and "Knife Training".

## Discussion

Schenker (1995) suggests that a cross-sectional or descriptive study design is the most appropriate for characterizing the magnitude and nature of health problems in the migrant farmworker population. But, there are several unique constraints or methodological issues which normally may not be encountered in descriptive studies of other occupational groups. Population size estimates of migrant farmworkers vary considerably, depending on the accepted definition of a migrant farmworker, source of data, time of year, and location of workers. Movement of the population between the United States and Mexico, seasonal and geographical changes in location of employment, legal status, and language barriers are additional constraints.



Table 10. Comparison of worker (Nw = 106 workers) and employer (Ne = 84 employers) responses concerning safety topics included in formal employee training

Safety Topics	Worker Responses		Employer Responses	
	Workers (No.)	Workers (%)	Employers (No.)	Employers (%)
Explaining safety rules	41	39	7	8
How to use and maintain a respirator	2	2	5	6
Hazard communication	6	6	3	4
Vehicle operation safety	4	4	4	5
Tractor safety	2	2	7	8
Ladder safety	1	1	2	2
How to perform CPR	0	0	1	1
What to do in case of an emergency	4	4	5	6
Heat-related hazards	1	1	1	1
Knife training	3	3	1	1
Manual lifting	6	6	3	3
Run-over hazards	2	2	1	1
Other machinery hazards	1	1	3	4
Pesticide hazards application	1	1	3	4
Pesticide hazards early entry	2	2	4	5
Skin cancer prevention	0	0	1	1
Basic first aid training	3	3	2	2
Other	0	0	1	1
No formal training	65	52	50	60
No response	0	0	20	24

Based upon the descriptive information obtained from the Ohio Migrant Ombudsman and grower associations, it was assumed that this purposive sample of migrant workers and employers provided adequate data to be representative. Selection bias was a major threat in this employment-based study design. By interviewing at employer-provided labor camps or work sites a "healthy worker effect" may occur, where individuals who are unable to work or disabled are excluded (Schenker and McCurdy, 1990). This effect was minimized by the inclusion of two migrant clinic interview sites where injured or ill workers were included. In addition, careful consideration was taken to select eight sites at labor camps and work sites representative of the four major groups. In order to maintain anonymity of the workers and employers, no effort was made to link migrant workers to specific employers. Participation in the interview was voluntary and no monetary compensation or incentive was offered by researchers. This may also have been a source of selection bias.

Since the interview data was collected at one point in time, another possible threat was instrumentation bias. Since many of the interviews were conducted during breaks or after work at the labor camps, worksite or clinic waiting room, the conditions for the interview may have varied considerably. Standardized interview script and procedures were utilized to control for this threat. In addition, both male and female trained interviewers were available if the participant requested.

Another possible bias was the attitude of the subjects (e.g., Hawthorne Effect), where participants may alter their responses concerning safety and health because of the special attention they are receiving. In developing the interview instrument and script, special attention was given to avoid leading questions or statements concerning the outcomes of the survey.

The relatively small number of reported occupational illnesses and injuries limits the interpretation of the results. The incidence of occupational illness (14% over a

three-year period) and injuries (25% over a three-year period) is well below the national annual rate for agricultural workers (10.6%; Bureau of Labor Statistics, 1993). Of 287 migrant farmworkers studied in North Carolina, 8.4% reported an occupational injury during the previous three years. Broken bones, sprains, and cuts accounted for 80% of the injuries. The use of recall rather than surveillance strategies, the social and economic ramifications of injury in farm work, and the exclusion of previously injured workers from the current work force were identified as contributing factors to the under-ascertainment. (Ciesielski et al., 1991). An example of a social ramification found in this study was that several subjects stated they feared retribution by their employer if they reported an injury or illness. Others stated that they "had to keep working" and often did not seek professional medical attention.

Another possible factor is an inherent belief among the workers that injury and illness is a way of life. In 1992, a series of focus groups was held with 55 Hispanic migrant agricultural workers in central Wisconsin concerning cancer. Participants' fears regarding cancer were coupled with a strong sense of fatalism or *fatalismo* (that is, there is little or nothing a person can do to prevent or survive cancer). A common belief is held that whether or not a person gets cancer or is cured is God's will. Strong religious faith was often coupled with a sense of personal powerlessness. Participants in this study reported that they were reluctant to demand occupational protections to which they are entitled because they were afraid of losing their jobs. The sense that they are easily replaceable with someone who will not challenge an employer on safety issues appears to prevent many migrant agricultural workers from asking for protections to which they are entitled by law (Lantz et al., 1992).

Rust (1990), among others, states that surveillance of occupational injury in migrant and seasonal farmworkers poses even greater challenges than that of farmers and permanent farm help. There are difficulties in identifying farmworkers and gaining their cooperation in a study after a long workday. Underreporting may also be prominent if symptoms are either mild, short-lived or both. Symptoms might be ignored by a temporary farmworker who is fearful of losing his or her job or of being reported to immigration authorities.

In the past, an accepted description of typical migrant farmworkers was that they were predominately male; tended to be older workers, with a median age of 32; and their racial composition was about 46% White, 15% Hispanic, and 39% Black and other races (Slesinger and Pfeffer, 1992). Researchers in this study found that the majority of the migrant workers coming to Ohio are Hispanic males (70%), with an average age of 32 yrs. Perhaps more importantly, over 50% of the workers interviewed were less than 21 yrs old and had less than one year of migrant work experience. Over 80% travel north from the Lower Rio Grand Valley in South Texas or Northern Mexico. Almost three out of every four workers could not read or write English, while three out of five workers could not speak English. A quarter of the workers were functionally illiterate (i.e., completed less than five years of school). Similar demographic characteristics were found in a survey of the economic and health needs of migrant workers in Wisconsin in 1989 (Slesinger and Ofstead, 1992). Researchers found that 94% of Wisconsin's migrant workers were of Mexican ancestry; about 72% are male and their ages range from 16 to over 60 yrs old. Sixteen percent of the men and 19% of the women were functionally illiterate.

## Conclusions and Recommendations

The results of this safety and health needs assessment indicate that migrant farmworkers in Ohio are not receiving adequate, standardized safety and health training. The primary goal of the survey was to describe the typical migrant farmworker and the current level of employee safety training he or she was receiving. The migrant population is not a homogeneous group. Predominately Hispanic, they have a wide range of work experience, English fluency, and education level. Unfortunately, this study provided little insight of the magnitude and nature of migrant-related injury and illness. What little safety training that was being provided by employers was developed by their own staff and is often informal, using ineffective or few training methods and materials. Of special significance is that over 50% of the workers were under 21 yrs of age and had little commercial agricultural experience. Based upon the information obtained by this study, four recommendations for future development of migrant safety and health programming are discussed.

First, there is a critical need for programmatic and educational support for the growers, managers, and crew chiefs who develop and conduct training. The level of safety and health competency of these individuals must be raised before they can effectively train their workers. This underlines the importance of "Train the Trainer" programs and materials, employer incentives to improve quality of training, and increased regulations for mandatory employee training. Second, it is imperative that future safety and health programming address the special requirements of the emerging group of inexperienced "new stream" workers. Growers, managers, crew chiefs, and safety professionals must familiarize the novice with basic agricultural and occupational safety and health fundamentals. Training must advance past simply pairing the new worker with an experienced employee for a short-time to frequently explain and demonstrate why and how the safe procedure is the most appropriate. Third, the "one size fits all" approach to migrant safety and health training may no longer be appropriate. Instead, educational programs and materials must be provided in both English and Spanish and be suitable for a wide range of educational and fluency levels. Programming must be sensitive to the fatalistic or *fatalismo* attitude and the migrant's tendency to minimize their injury or illness due to fear of employer retribution or economic constraints. Finally, there is a critical need for more population-based research in order to fully characterize the nature and frequency of occupational injuries and illnesses in this unique labor group. Rather than rely upon recall by the migrant worker, existing injury and illness surveillance systems should be modified to include migrant farmworkers as a separate, but equal, group of agricultural workers. This could allow the opportunity for future researchers to study the magnitude and nature of occupational illness and injury among migrant farmworkers over an extended period of time.

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