Agricultural Accident Statistics

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For 25 years after farm safety became an organized department of the National Safety Council, the Farm Conference and others expressed the need for a national profile of agricultural accidents if an effective counter attack was to be made on this problem.

In 1968, when Michigan State University conducted an accident study based on the random stratified sampling technique used by Ohio State University in 1967, it was the first time that two states could be compared directly as far as agricultural statistics were concerned.

The National Safety Council Statistics and Farm Department then developed a step-by-step procedure for other states to conduct similar studies. We utilized the experience of these two states, Michigan and Ohio, and added what we call bi-level or supplementary accident forms for specific types of accidents. If you develop one form for all of the potential possibilities in reporting an accident you would have a form that is just impossible to use. So instead we get the basic accident information on the original form and then arbitrarily decide we want more information in specific areas - such as tractors, or elevators and augers or animal accidents and so on and then develop a supplementary form which will be used in the event that such an accident occurs. Now this allows us to obtain not only profile information on the kinds of accidents and the magnitude of the problem, but also we're getting a lot more information about specific kinds of major accident problems.

Eleven $2,000 grants were authorized by the National Safety Council to be given to states who would conduct this study as developed by NSC. The concept offered standardized techniques and information but allowed a high degree of flexibility to obtain additional information by states who

had unique problems or interests. I might add this $2,000 in no way covered the out-of-pocket expense of the program, but apparently was enough to interest and motivate these states into conducting it.

Based on continuing experience, the procedure was revised and streamlined in 1972. The survey procedures and reporting forms are in a continuous state of updating to adjust to individual needs as well as to take advantage of lessons we learned from each study.

To date, eleven state surveys are completed, four more will be completed this year or early next year and seven more states are gearing up to start in 1975. These twenty-two state studies will be representative of approximately 70 per cent of the farms and ranches in the United States.

State land grant universities have been spearheading these studies in most states utilizing the extension service as well as other expertise from other departments, such as agricultural economics or rural sociology, to develop the sample for the particular state. Farm organizations, extension homemakers councils and other organizations have furnished the voluntary interviewers at the county level.

With the help of the Extension Serivce, USDA, the American Farm Bureau and other organizations, the U.S. now has been arbitrarily divided into nine regions of five or six states each. We have combined the smaller states in some areas so we have basically five units within each region. The states will rotate the study within the regions for the next five years so at the end of this time we will, in fact, have a national profile as well as a great body of knowledge describing the accident picture as it is on our farms and ranches.

In anticipation of an increasing and continuing body of farm accident statistics, we are developing ways of establishing a priority list of problems. We have based it on severity as well as frequency and at this time the

weighting by severity seems to be the most acceptable as far as our conference is concerned.

Our Statistics Department has also developed a technique called "tree-search" which is particularly effective when analyzing large numbers of accident cases. The "tree-search" technique is used to determine which type of accidents meeting certain criteria are occurring significantly more often than expected. For example, in a matter of minutes we can determine which day of the week shows up significantly more often than expected for males, aged 15 to 24, who had an accident with hand tools in farm buildings. As many as 20 variables can be used as criteria in a single search. Now this technique will become increasingly effective as the total number of accidents recorded increases. Obviously, with the 3,800 cases we currently have, if you limit a particular kind of accident to all these criteria you may get down to one or two accidents which, of course, if hardly significant. But it's a technique which can be used and by the time we have these four more states we will have doubled the number of accidents so that as we get more accidents we will be able to use this system much more effectively.

Our statisticians tell us that if we have at least one hundred accidents of a particular type and in sufficient depth from a statistical sample, we can probably get 80-90% of the information about the specific kind of accident that we need so that either educational material, design criteria or possibly even regulatory information can be developed. We have done this in the area of farm tractors and elevators and augers. It wasn't too many years ago that the word was that it was impossible to elevate corn with a guard over the intake because you couldn't get the corn in. Well, if you'll notice the design of the elevators and augers on today's market, three or four years after this study came out, you'll see that it is possible and we are progressing steadily in the area of guarding a lot of these machines. We also have done a study on home and work falls. We find that home falls in rural homes is not particularly unique or different than you would find in their urban counterpart. A lot of the states in the study were located in the ice belt from New York to Minnesota, including Oregon and ice was a problem in nearly half of the work falls outdoors. This probably will not be as large a factor when we get other states added to the total.

An accident, as defined in this study, is an event that results in an injury requiring professional medical care or that results in the loss of a half-day or more time from normal activity. Farm and ranch residents, hired help and others working or visiting on farms and ranches had approximately 170,000 accidental injuries in a one-year period. This projected total is from the 10-state summary of May 1973 which recorded an actual 3,810 accident cases with approximately a $2\frac{1}{2}$ percent sample of the farms in each participating state.

Nearly 2/3 of the 170,000 accidents were on the job. Family members accounted for 87 percent of these accidents and hired help 11 percent. Visitors and others accounted for the balance. On the injuries reported, 62 percent were classified as slight, 34 percent severe, 3 percent permanent, and .9 percent were fatal.

Typically, falls accounted for approximately 30 percent of the accidents in the home and 25 percent of the work accidents. It is important that we zero in on the major accident causes while trying to prevent accidents in rural areas.

When injuries by parts of the body were reviewed, we feel we are missing a real bet by not utilizing protective apparel on farms as they have for many years in other businesses, or other industries. Hard hats, safety shoes, eye shields and other apparel are available at a relatively low cost and could make a significant reduction in the number and severity of injuries. I could go on and on but time does not permit and I assure you that we would be most happy to share this information with those of you who would like to follow up on it. In summary, we feel the studies meet the following criteria for acceptable data sources.

You get sufficient information to give you the overall picture - the profiles of the major problems - so that priorities can be set and resources for education and other things allocated.

You get exposure information so that raw accident figures can be evaluated properly.

You get sufficient details of selected individual cases so that countermeasures can be suggested.

Data gatering is relatively inexpensive. This is because of the use of volunteers which we're very strong on and believe that this is one of the keys to getting good accident data.

You can generalize the information gathered in other areas - the data is not simply local statistics.

You can at least begin to estimate the error in your figures to get an idea of the accuracy of available information.

Here is a real important one, I think. The studies can be repeated to verify information previously obtained, to check the effectiveness of countermeasures or programs, and to determine accident trends.

You get results without waiting too long. Somewhere between a year and a half and two years, after you initiate this program, you can get the information and summarize it.

Finally, it works, and is working.

We feel gratified that a long-felt need for better statistics in agricultural accidents is finally coming to fruition thanks to literally thousands of professionals and volunteers throughout the country, and that this information will not only give us the knowledge we need but will also point more precisely to areas that could produce results with additional research persons and adequately funded research projects.

Thank you.

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