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Editorial

Farm Tractor Rollover Protection: Why Simply Getting Rollover Protective Structures Installed on All Tractors is Not Sufficient

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In North America, agricultural is one of the most hazardous occupations, trailing only mining and construction in likelihood of experiencing a serious injury or fatality. Without quoting specific statistics, roughly one-half of the serious injuries experienced each year involve an agricultural tractor, and roughly one-half of the serious injuries involving tractors are rollovers. It is well established that when a tractor is equipped with a rollover protective structure (ROPS) and seatbelt, and both are utilized, serious injuries rarely, if ever occur, in the event of an overturn. In fact, tractor overturns are the leading cause of agricultural fatalities in the United States. Loringer and Myers (2008) have studied the population of ROPS-equipped tractors and have estimated that as of 2004, only 51% of tractors in service were equipped with ROPS. Predictions based on past experience suggest that it will be 2024 before 75% of the tractors in service will be equipped with ROPS if no other actions are taken. While this problem is indeed a large rock protruding through the water, it is worthwhile to begin to explore what other rocks lay below the surface so that effective strategies can be developed to address them as the water level drops.

Myers has collected and presented data on the ages of tractors and whether or not they were ROPS equipped. In 1975, OSHA promulgated rules requiring ROPS on agricultural tractors. In 1985, ASAE S318.10 was introduced to require ROPS on all tractors for the first time. It would seem, therefore, reasonable to assume that all tractors placed in service since 1985 are ROPS equipped. However, a review of the Myers data shows that this is not the case. For tractors in service for 0 to 4 years, only 93.8% are reported to be ROPS equipped. For tractors in service for 5 to 9 years, only 92.8% are reported to have a ROPS. It would appear that if all tractors in service were to be sold with ROPS, then long term 6% to 7% would be operated without ROPS. Using the Myers data and assumptions, this would lead to 18 to 20 deaths per year due to rollovers.

One possible explanation for the removal of ROPS from tractors is the need to operate under obstructions, within buildings, etc. OSHA standards address this need by providing an exception to the otherwise mandatory ROPS requirement for low-clearance applications. ROPS and tractor manufacturers have also addressed this need in recent years to some extent by creating foldable ROPS, which can be lowered when necessary. Foldable ROPS, however, only partially solve the problem, and a recent survey done by the EC commission of EC member states revealed that 40% of serious injuries and deaths during tractor overturns occurred when a foldable ROPS was not deployed into its protective position. The second most likely cause of death or serious injury in the European countries that reported was due to the lack of seat belts or the lack of use of seat belts by tractor operators during an overturn. It should be noted that EC regulations require the use of ROPS on all tractors in service, so it is rare to find a tractor in Europe that is not ROPS equipped.

In summary, simply providing a ROPS on each tractor in service will not in itself be sufficient to reduce serious deaths and injuries due to overturns to an acceptable level. A more complete study is needed to determine the reasons why ROPS are sometimes removed from tractors and determine if new safety measures, such as the AutoROPS (Powers et al., 2001; Etherton et al., 2002) that has been developed by NIOSH, are necessary to address these reasons. Further, efforts are also needed to study and increase seatbelt usage compliance on agricultural tractors.

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