

# The "Mr. Good Egg Farmer" Model Tractor Overturn Activity

## Instructor's Guide and Activity Materials

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### Overview

During a tractor overturn a rollover protective structure (ROPS) and seat belt is 99% effective in preventing injury to the operator. It is estimated that when tractors without ROPS overturn, the operator is killed about one-fifth of the time or more. Some farmers survive these overturns, but many are injured, some severely and sometimes these injuries result in permanent disabilities. A ROPS and a fastened seat belt can prevent nearly all of these injuries and deaths.

This activity demonstrates the effectiveness of a rollover protective structure (ROPS) and seat belt. It uses a 1/16 scale model tractor without a ROPS and seat belt, and the same tractor (or a second tractor) fitted with a ROPS and seat belt. The tractor operators are simulated with a raw eggs with faces drawn on them with felt tipped pens. The eggs are called "Mr. Good Egg farmers."

The demonstration involves three steps. First, a "Mr. Good Egg farmer is placed on the tractor seat of the model tractor without a ROPS and seat belt. The tractor is then run across a cardboard bridge placed on the floor or the top of a large table. A portion of the bridge side fails under the weight of the tractor and a sideways overturn results. (The bridge represents the bank along a stream or gully and the failure represents the slumping of the edge of the bank under the weight of the tractor.) The overturn almost always results in the Mr. Good Egg farmer being crushed.

Second, the tractor is then retrofitted with a ROPS (or a second similar model tractor equipped with a ROPS is substituted for the first tractor). The procedure is repeated. As the tractor runs across the cardboard bridge and the "bank" fails, a sideways overturn results. The ROPS keeps the tractor from rolling on top of and crushing the second Mr. Good Egg farmer, but the egg is thrown from the tractor during the overturn and usually breaks during its impact with the surface of the floor or desk.

A third Mr. Good Egg farmer is then attached to the seat of the tractor ROPS-equipped tractor. Two pieces of Velcro sticky-backed tape are attached to the tractor seat back and bottom. Then two pieces of the matching Velcro tape is stuck to the back and bottom of the egg. When the egg is pressed into place on the tractor seat, the Velcro acts like a seat belt. It holds the egg firmly in place on the tractor seat even when the tractor is turned upside down and shaken.

Next, the tractor is run across the cardboard bridge, the "bank" fails, and a sideways overturn results. But this Mr. Good Egg farmer is almost always undamaged because it stays in the tractor seat and within the frame of safety provided by the ROPS.

This activity requires a minimum of effort and equipment on the part of the instructor. A list of all the materials needed and instructions for their assembly are provided in this

document. All of these materials are easily available and once assembled can be reused many times with a minimum of preparation time. The only consumables are the raw eggs which can be replenished at any supermarket. Gathering the materials, constructing the simple apparatus needed, and carrying out the demonstration is also a good class project for vocational agriculture students.

Once you have constructed the apparatus and gathered the materials, allow about one hour to complete the activity with 30 minutes for the demonstration and another 30 minutes for discussion and follow-up activities. A set of follow-up questions and materials are included in this instructor's copy.

## **Purpose and Objectives**

The activity illustrates that tractor rollover protective structures (ROPS) and seat belts, while not capable of preventing overturns, are extremely effective in minimizing the terrible injury cost, and social consequences of tractor overturn events. The activity's learning outcomes or objectives for the participants are listed below.

1. Observe and describe the damage to the Mr. Good Egg farmer operators that result from overturns of a model tractor:
  - without a ROPS
  - with a ROPS but where the operator is unbelted
  - with a ROPS and where the operator is belted in place within "the frame of safety"
2. Generalize and describe how the model tractor and Mr. Good Egg farmer activity illustrate the protective value of ROPS to operators of real tractors.
3. Promote thoughts, favorable attitudes, and discussion about the value of ROPS in preventing injuries from tractor overturns.
4. Evaluate and discuss the cost effectiveness of ROPS and seat belts in terms of their potential for
  - saving money by preventing injury and death
  - providing peace of mind to tractor operators and their family members
  - ensuring the continued operation of family farms and a way of life
5. Promote farm family members' increased interest in and efforts to acquire ROPS for their tractors.
6. Promote farmers' increased frequency of wearing seat belts when operating ROPS equipped tractors
7. Involve farm youth vocational agriculture students in the construction and use of the Mr. Good Egg Farmer materials and activities to disseminate the educational messages to members of the farm community

## **Intended Audience**

The activity is designed to be used with groups that range in age from farm youth in 4-H groups to farm community adults.

The activity is a simple concrete and graphic demonstration of the protection provided by ROPS and seat belts. The principles of how and why a ROPS and seat belt protects the tractor operator during an overturn are easily apparent to both children and adults.

The follow-up questions, discussion, and activities can help tailor the activity to the needs, interests, and capabilities of the group. For example, adult farmers who participate in the activity may be stimulated to learn more about how to obtain a ROPS and the costs involved. Children are not usually involved in such decisions, but they may be stimulated to think about and ask their parents to get ROPS on tractors and to wear the seat belts on these tractors. The children may also be more inclined to wear the seat belt when they drive ROPS-equipped tractors.