

SAFE FARM

Promoting Agricultural Health and Safety



Use tractors with ROPS to save lives

Tractors are common to all farm operations. They also are the major cause of death in agriculture today. Tractors are linked to more than half of farm-related deaths, both nationally and in Iowa. The National Safety Council estimates more than 100 people were killed in 2004 while operating a tractor. About half those deaths were the result of a tractor rollover.

The high death rate associated with tractor rollovers is not a new problem. Since 1970, tractor rollover has been the leading cause of farm operator deaths, according to the National Safety Council.

Statistics from tractor rollover injuries show that about five people are killed per year for every 100,000 tractors in operation. The cumulative death toll from tractor rollovers since the development of the tractor is staggering.

What is ROPS?

ROPS, or rollover protective structure, is a cab or frame that provides a safe environment for the tractor operator in the event of a rollover. Also called anti-roll bars or ROPS cabs, all are designed to prevent death and minimize injury.

However, the first ROPS device was not marketed on new tractors until 1965. Many old tractors used today do not have ROPS.

The ROPS frame must pass a series of static or dynamic crush tests. These tests examine the ability of the ROPS to withstand various loads to see if the protective zone around the operator station remains intact in an overturn. The tests are extensive and destroy the rollover protective structure.

A homemade bar attached to the tractor axle, or simple sun shades, cannot protect the operator if the tractor overturns. Farm

operators should not add their own rollover protection devices to tractors manufactured without ROPS. Without proper design and testing, homemade devices offer a false sense of security that can be more dangerous than operating a tractor without ROPS. The Society of Automotive Engineers and the American Society of Agricultural Engineers have standards on the design of rollover protective structures.

Use seat belts with ROPS

ROPS affords some safety during tractor overturns, but operators need more protection. **All operators of tractors equipped with ROPS must wear seat belts.** Without a seat belt, the operator will not be confined to the protective zone created by the ROPS.

During an overturn, the operator of a tractor with ROPS could be thrown from the protected area and crushed by the tractor, or even the rollover protective structure itself, if the operator is not wearing a seat belt.

Never use seat belts on a tractor without ROPS. In this case, the operator has no chance of survival because the seat belt will keep the operator in the seat as the tractor rolls over and crushes the operator. It is not certain whether the operator would be thrown clear from the tractor if seat belts were not worn, but that remains the operator's only chance of survival.

Reduce your rollover risks

There are several ways to reduce the possibility of tractor rollovers. However, these safety practices are not a substitute for ROPS. Follow these tips, and use seat belts on tractors equipped with ROPS, to keep operators safe.

- Avoid sharp turns and reduce speed when turning. A tractor has a high

Tractor rollover safety

How much do you know?

Test your skill with this quick quiz.

1. Tractors cause a number of deaths every year in the United States. What percentage of those are from tractor rollovers?
 - a) 25 percent
 - b) 50 percent
 - c) 75 percent
2. If your tractor does not have ROPS, it's a good idea to make and install your own out of heavy metal bars to protect you in an overturn. True or false?
3. Which action(s) will reduce the chance that your tractor will roll over?
 - a) increasing speed when making sharp turns
 - b) heading up a steep slope
 - c) hitching higher than the drawbar to increase traction
 - d) none of the above
4. If your tractor is equipped with a rollover protective structure, you cannot roll the tractor over. True or false?

See answers on back.

center of gravity and can tip. Compare the shape of a tractor and a race car—race cars can turn at high speeds because they are low to the road; a tractor cannot turn quickly without overturning because it sits high above the road.

- **Avoid driving on steep embankments, near ditches, and around holes.** These areas are prone to rollovers. The ground can give way, the tractor will lose support and roll over. When conditions require operation on steep slopes, always head down slopes and travel backwards up slopes. This will place the tractor in a more stable position and reduce rollover risks.
- **Hitch only to a drawbar.** Many injuries occur when loads are hitched to the axle housing or other parts of the tractor. If you have a three-point hitch on your tractor, use it only with implements designed for a three-point hitch. If you attach implements to something higher than a drawbar, you can cause the tractor to roll over.

New equipment with ROPS

In 1985, tractor manufacturers adopted a voluntary standard to sell all tractors with ROPS in place. All new tractors are equipped at the factory with ROPS. The ROPS may be part of the cab structure and may not be visible, but the protection will be there.

Tractors made more than 40 years ago without advances in safety technology are operational today. It is estimated that less than one-third of the 4.4 million tractors used for agricultural purposes have ROPS. Older tractors often are used in situations typically associated with tractor rollover injuries, such as mowing the road ditch area, using a front-end loader, and hauling fallen trees.

Retrofit older tractors

Older tractors can be retrofitted with rollover protective structures. Check with your local dealer or Extension office. Extension staff have access to a book compiled by the National Farm Medicine Center in Wisconsin that lists manufacturers, models, and approximate costs of obtaining retrofit ROPS for tractors. Retrofitting can pose a difficult decision because its cost for an older tractor can exceed the machine's actual value. However, the true cost is in the lives that could be saved.

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Tractor rollover safety

What can you do?

You can reduce your risk of being injured or killed while operating a tractor. Check your operation for the following items.

- Identify all tractors in your operation that have ROPS; check for seat belts.
- Post a reminder on tractors with ROPS for operators to wear a seat belt.
- Make a long-range plan to phase out or retrofit all tractors without ROPS.
- Identify tasks that would take you over steep embankments, near ditches, around holes, and other areas prone to tractor rollovers. Instruct everyone who operates a tractor in these areas to use only tractors with ROPS and seatbelts.

Answers to quiz:

1-b; 2-False; 3-d; 4-False

For more information

Other ISU Extension and Outreach publications may help you develop guidelines for working with animals, or address other related issues.

Go to <https://store.extension.iastate.edu>.

This publication covers only some aspects of farm safety.

Other fact sheets in the Safe Farm series are available. Ask for:

[Extra Riders Mean Extra Dangers](#)

[Reduce Risks Around Big Round Bales](#)

[Reduce Farm Accident Risk on Roads](#)

[Use SMV Signs for Your Safety](#)

SAFE FARM

Safe Farm is an Iowa State University Extension and Outreach project helping to make Iowa farms a safer place to work and live.

For more safety information, check the web at www.abe.iastate.edu.