Tractor overturns are the leading cause of fatal injuries on U.S. farms. Approximately one in ten operators overturn a tractor in his or her lifetime.

Most tractor fatalities result from a tractor turning over either sideways or backward and the majority are preventable if the operator follows the best practices for safe tractor operation.

Some common examples of tractor overturns include:

• Turning or driving too close to the edge of a bank or ditch
• Driving too fast on rough roads or lanes and running or bouncing off the road or lane
• Hitching somewhere other than the drawbar when pulling or towing objects
• Driving a tractor straight up a slope that is too steep
• Turning a tractor sharply with a front-end loader raised high

Safe operating techniques reduce the risk of overturns.

• ROPS are 99% effective in preventing serious injury or death when used with a seatbelt.
ROPS save lives!

A rollover protective structure (ROPS) is a roll bar or cage frame that is designed specifically for tractors to create a zone of protection around the operator in the event of a tractor overturn. ROPS do not prevent rollovers from occurring, but they may limit the degree of rollover to 90 degrees. Most rollovers result from tractor speed, operator error, or unsafe driving conditions.

ROPS are designed to be used in conjunction with seatbelts, which keep the operator in place within the protective zone framed by the ROPS. Without a seatbelt, an operator may be thrown from the tractor and crushed by the tractor or the ROPS.

ROPS became standard equipment on U.S.-manufactured tractors in 1986, but many tractors manufactured before 1986 are still widely used on farms and unlikely to have been retrofitted with ROPS.

A ROPS can protect you if the tractor overturns. However, it cannot keep the tractor from overturning in the first place. Always follow best practices for tractor safety.

Tractor Safety Best Practices

To reduce the risk of a rear overturn

- Always hitch loads at the drawbar, never higher.
- Use front weights to increase tractor stability.
- Do not change gears when traveling on a slope.
- Start forward motion slowly and change speed gradually.
- If possible, avoid backing downhill. It is safest to drive down a hill and back up a hill.
- Drive around ditches rather than through them.
- Back out or be towed out of ditches or mud.
- Keep the front-end loader low when travelling and turning.
- Do not raise the load until you have reached the destination and the tractor is no longer in motion.

To reduce the risk of a side rollover

- Lock the brake pedals together before high-speed road travel.
- Match speed to operating conditions and loads. Operate at low gear and speeds and do not let the front wheels bounce.
- Slow down before turning.
- Use engine braking when going downhill.
- Avoid crossing steep slopes. Watch for depressions on the downhill side and bumps on the uphill side.
- Turn downhill, not uphill, if stability becomes a problem.
- Keep side-mounted implements on the uphill side of the tractor.
- Stay 10 feet or more away from ditches and steep slopes. Slow down to maintain control.
- Stay 10 feet or more from a riverbank which may be steep. Slow down to maintain control.
- Travel with the front-end loader bucket as low as possible to maintain a low center of gravity.
- If the right front tire goes off the road into the ditch, turn downward or hold steady and slowly recover. Do not attempt to turn sharply back onto the roadway.

This was developed for Penn State Extension Bilingual Tractor Safety Trainings for Specialty Crop Growers, with support from Specialty Crop Block Grant #ME44187248.

Additional Resources

For additional information about tractor stability, visit Penn State Extension:

- Tractor Stability and Instability
- Rollover Protection for Farm Tractor Operators
- Tractor Stability and Instability (Spanish)
Source

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Penn State College of Agricultural Sciences research and extension programs are funded in part by Pennsylvania counties, the Commonwealth of Pennsylvania, and the U.S. Department of Agriculture.

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Code: ART-6172