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TRACTOR POWER

Implement key safety principles in managing these machines.

Throughout each year, farmers spend more time using tractors than any other farm equipment. No checklist could address all the hazards related to these powerful machines.

Adequate training helps raise awareness of tractor safety principles. However, since tractors are used to complete a diverse range of tasks on the farm, commitment to consistently implementing safety principles is the best defense against tractor-related injury or loss of life.

Tractors are required for tillage, planting, portable feed mixing, use as a stationary power source, baling, etc. This diversity requires a thorough knowledge of how to stay safe when using tractors in these very different situations.

“When you’re working at so many different tasks, it’s harder to protect yourself,” Aaron Yoder, University of Nebraska Medical Center College of Public Health, Department of Environmental, Agricultural and Occupational Health, says. “These large, powerful machines weigh anywhere from 3,000 pounds to 20,000 pounds with anywhere from 30hp to more than 200hp. Humans are no match for that kind of power.”

Overturns, entanglements, falls, sheer points, pinch points and crushing hazards are among some of the prominent safety issues related to using tractors. Operators who are most susceptible to tractor-related injury and fatality are youth with physical limitations and aging operators who also deal with declining physical abilities.

Farm injury statistics reveal that between 30% and 50% of all farm injuries involve tractors.

“When you visit with folks in ag communities, nearly everyone knows of someone who had an accident or farm-related tractor injury,” Yoder says. “Sideways rollovers are the most common tractor accidents. These are slightly less fatal than rear rollovers. Rollovers can happen

just about anywhere, but they often occur during field work and maintenance activities such as mowing road ditches.”

When rollovers occur, if the operator isn't using a seatbelt, they are usually thrown from the tractor, which can lead to being crushed by the tractor. When a tractor's center of gravity gets out over its tires, a rollover can quickly flip the machine.

“Centrifugal force, caused by turning a corner at too high a speed or driving the tractor too fast, can also lead to a rollover,” Yoder says. “When rollover protective structures (ROPS) are in place and the operator wears a seatbelt, the potential for injury during a rollover is greatly reduced.”

To help prevent sideways rollovers, use of tractors with a wide set of wheels gives the tractor greater stability. Restricting speed, avoiding bouncing along rough terrain and slowing down during turns will also help reduce rollover potential.

Additional precautions include avoiding driving the tractor up or down steep slopes, using braking on downhill grades and using extra caution when working around ditches.

“However deep the ditch is, stay an equal distance away from the ditch edge,” Yoder says. “Keep in mind that sandy soils will give way under the weight of a tractor more quickly than other types of soil. If the soil is wet, it will respond differently to the tractor weight than when it's dry.”

Use of a front loader changes a tractor's center of gravity. When the tractor is moving, the loader should always be kept low. Keep in mind that a tractor's center of gravity can quickly shift when it's moving.

Rear overturns are more likely to be fatal than side overturns, especially if a ROPS or some type of rollbar is not in place. It takes about 45 seconds for a tractor to reach the point of no return if it's tipping to the rear. Generally, operators in this situation are pinned underneath the tractor.

Among the things that can lead to a rear overturn include hitching a load too high, fast starts and popping the clutch.

“When we use a tractor for jobs such as pulling a vehicle that's stuck or something we don't often do, it's easier to bypass safety practices,” Yoder says. “The risk for injury is always higher when we're using a tractor for a task that's not familiar. Or maybe we get in a hurry and we're working in poor weather conditions. Keep in mind that with unfamiliar tasks, it's a time to take extra precaution.”

To help prevent rear tractor overturns:

- Hitch towed loads only to the drawbar.
- Limit the height of a 3-point hitch, keeping it as low as possible.
- Use weights for balance to help maintain tractor stability whenever it's applicable.
- When operating the tractor, maintain the center of gravity in the middle of the machine.
- Forward motion should be gradual and slow as changing speed quickly applies torque to the tractor wheels.
- Avoid using tractors around ditches and other obstructions.
- Use extra precaution when moving up or down slopes.

“Don’t overload the weight capacity of your tractor,” Yoder says. “This is another great risk for causing a rear overturn. No matter what kind of overturn occurs, a ROPS will help limit the degree of the rollover, protect the operator and limit damage to the tractor.”

When ROPS are in place, tractors generally don’t roll on top of the operator. ROPS will not help prevent a rollover, but will help protect the life of the operator and minimize the impact on the tractor if a rollover occurs.

ROPS give a high degree of protection to tractor operators. However, wearing a seatbelt gives them an extra layer of protection, reducing the likelihood of being thrown out of the seat during a rollover or crushed if the tractor rolls completely over.

Tractor runovers are another major cause of tractor-related incidents. In 50% of runovers, operators fall from the tractor and are run over by the tractor or equipment attached to the tractor.

“Often, children and other extra riders don’t comprehend the dangers of falling from the tractor,” Yoder says. “In 27% of runover accidents, victims are bystanders, someone helping with a task, people who are visitors, or children.”

Bypassing a tractor’s starter can quickly lead to a runover if the tractor starts moving. Among the injuries sustained by runovers are spinal injuries, crushing injuries, bone fractures, even some fatalities.

“Agritourism activities are great opportunities to teach children and visitors about how to safely operate a tractor,” Yoder says. “Many times, vintage tractors are used in agritourism because of their visual appeal. During agritourism events, always be sure you’re towing the appropriate amount of weight for the tractor, that you can safely stop the tractor and all safety precautions are being observed. Keep in mind that antique tractors may not be the safest option for your agritourism event.”

Additional tractor safety resources include 4-H training opportunities, Future Farmers of America (FFA)/Agriculture Education, and AgSaety-4U at <https://ag-safety.extension.org/agsafety4u-certificate-course/>.

“The best seeds of safety are sown during training,” Yoder says. “It’s never too early to learn how to safely operate a tractor. It’s helpful to share safety training and make resources available to all tractor operators.”

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