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PRESS RELEASE

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FOR IMMEDIATE RELEASE

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HANDLING LARGE ROUND BALES
Know what risks you're exposed to so you can work safely.

How can the weight of a large round bale become a deadly force?

Aaron Yoder, PH.D., Associate Professor, Department of Environmental, Agricultural & Occupational Health at the University of Nebraska Medical Center (UNMC), says understanding the role center of gravity (CG) plays in handling bales that weigh between 500 and 2,500 pounds is key element of avoiding a tractor or loader rollover.

A tractor's CG is the point where all parts balance one another. Approximately 30% of the tractor weight is on the front axle and 70% is on the rear axle. Adding weight to the tractor can affect the CG.

For a tractor to stay upright, it's CG must stay within the stability baseline or where the tires touch the ground. The position of the CG can change if the tractor moves from a level position onto a slope, or significant weight is added to either the front or rear of the tractor.

"When a tractor or loader carries a bale, the center of gravity on that equipment shifts," Yoder says. "The center of gravity raises, increasing the risk for a tractor or loader rollover. That risk is increased if the equipment loses traction when operating on rough or wet terrain."

To offset the center of gravity shift, Yoder advises modifications to the tractor/loader such as widening the wheelbase or using ballast fluid in the tires or additional counterweights. If the center of gravity shifts to the rear of the tractor, it can cause the front end to rise. If the front rises too much, the front tires lose stability and steering is impaired.

Tractors used to move bales should be equipped with a rollover protective structure (ROPS), and the operator should always buckle the tractor's seatbelt. A ROPS limits the degree of

rollover, helping protect the operator. Be aware that a ROPS is not designed to protect the tractor operator from the weight of a falling bale.

Most front-end loaders have a load capacity either stamped on the equipment or listed in a decal on the machine. The information should also be found in the equipment manual. Overloading the equipment greatly increases the risk of injury to the operator as well as damage to the machine.

"Using a grapple hook or bale spear to move a bale reduces potential for the bale to roll back onto the loader arms or operator," Yoder says. "If the bales are stored uncovered outside, be aware that recent moisture can add a significant amount of weight to the bale."

While moving a large round bale, avoid lifting it too high off the ground, which also results in a center of gravity shift. The bale should be high enough off the ground that it doesn't come in contact with anything, but it should never be lifted high enough that the equipment operator can see beneath the bale.

"Make sure you can see over the top of the bale," Yoder says. "Lifting it any higher increases the risk of a rollover."

Be aware of any overhead wires in the vicinity where bales are being moved. Keep speed at a minimum during the move, avoid "jerky" movements, and drive along terrain that's as flat and even as possible. Even a slight embankment can lead to a tractor overturn.

Yoder notes that co-workers, bystanders, or children should not be allowed to be in the area when bales are being moved should not be allowed.

"Vision is hindered when you're moving a large bale," Yoder says. "There should be no reason to have anyone else close to the bales or the equipment when bales are moved. Be aware of any animals that might be in the vicinity, too."

Because of their tremendous weight, if a large round bale falls from a stack or tears loose from a grapple hook, it can crush nearly anything in its path.

"Even in agritainment, you see people stack bales to create shapes or mazes," Yoder says. "If you're doing something like that, make sure you're stacking the bales on a stable, flat, solid surface. Use good formation to reduce the chance that a bale will fall. Keep in mind that, over time, bales will deteriorate, which can lead to unstable bale piles."

If multiple bales are being moved, the appropriate respiratory personal protection equipment (PPE) is recommended.

"Animals like to build nests in bale piles," Yoder says. "When you move bales, you may be exposed to animal feces and any of the diseases that go along with that, such as hantavirus. You may also encounter the animals themselves, including bees or wasps. Proper clothing and footwear will help protect against these hazards."

Use of respiratory equipment is especially critical when bales are ground. Tub grinders produce an immense amount of dust.

If the equipment operator must exit the equipment before depositing a bale on the ground, they should lower the bale to ground level and turn off the engine before getting out of the tractor/loader.

“The stored energy in a hydraulic system can fail, with the potential that the bale could fall on anyone or anything that’s beneath it. Never leave a bale suspended in the air if you must leave the tractor/loader.”

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