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Agriculture and Natural Resources

Safe Tractor Operation

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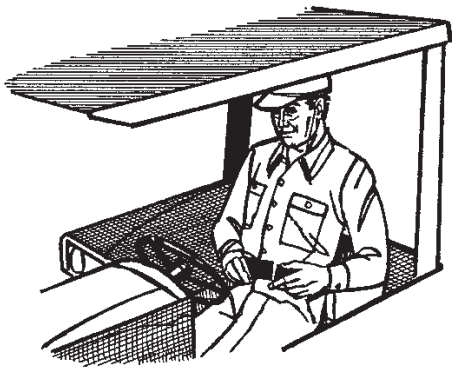
Tractor overturns are the leading cause of fatalities on the farm. In Arkansas, more than 50 people have been killed by tractor overturns in the last ten years. If this ten-year sample follows traditional accident patterns, approximately 500 farmers were seriously injured from overturns. Unfortunately, the human suffering and cost of tractor overturns is staggering.

Many farmers are killed or injured in tractor accidents each year. Improper operation of a tractor or equipment causes the greatest percentage of accidents. Common hazards must be respected. Every operator should develop a healthy concern for safety to minimize his personal danger. The most important point of tractor safety is to know your tractor. Know how the tractor handles, and be alert to avoid an accident.

The Occupational Safety and Health Administration (OSHA) enforces a Roll-Over Protective Structure (ROPS) Standard in an effort to reduce the death rate from overturns. The standard requires that all tractors manufactured after October 26, 1976, have ROPS. However, experts estimate that more than 2 million tractors remain unprotected.

The standard also requires that employees must receive training in safe tractor operation and in preventing overturns. Training is best given when first assigned to drive and reinforced at least annually. A good operator reads his tractor manual to gain proficiency in tractor operation. Develop safe driving practices, and evaluate your techniques periodically to eliminate unsafe habits.

1. **Securely fasten your seat belt, if the tractor has a Roll-Over Protective Structure.** The seat belt is meant to hold you within the safety zone of the ROPS if an upset occurs. The belt is there so that you will not be thrown from the tractor and crushed or injured. ROPS are designed to take the total impact of upset while protecting you.



Buckle up if your tractor is equipped with a Roll-Over Protective Structure (ROPS) Standard.

Don't wear a seat belt if your tractor is not equipped with a protective structure. If you do, you are likely to be pinned under the tractor in case of an upset.

2. **If there is any other alternative, avoid operating a tractor near ditches, embankments and holes.** Avoid holes and depressions that are likely to cause a side overturn. Reduce speed to minimize the possibility of side overturns. To assure safety

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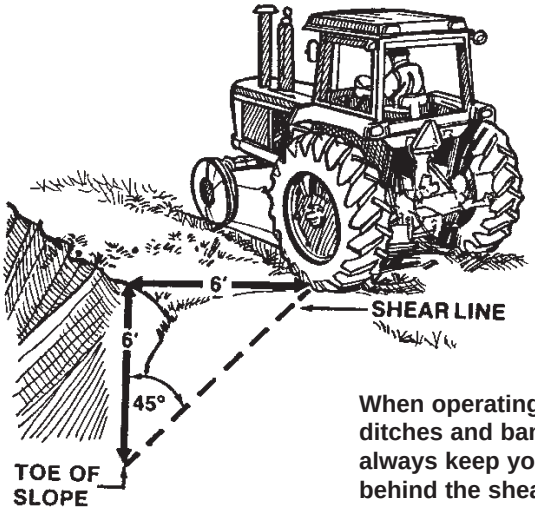
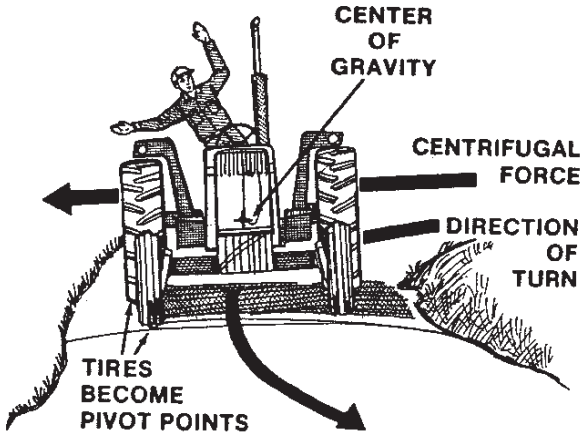
around ditches, pond and river embankments, levees and washouts, just stay away. When operating around a ditch, look ahead for holes, gullies and washouts. Embankments can collapse from equipment weight, so never approach any closer to a drop-off than the distance that the embankment is above the toe of the slope.



When operating near ditches and banks, always keep your tractor behind the shearline.

3. **Reduce speed when turning, crossing slopes and on rough, slick or muddy surfaces.** Slow down before making any turn. Centrifugal force is one of the major causes of tractor upsets. Centrifugal force tends to keep the tractor moving in a straight line. As you double the speed of a tractor while turning, the danger of upsetting is increased four times.

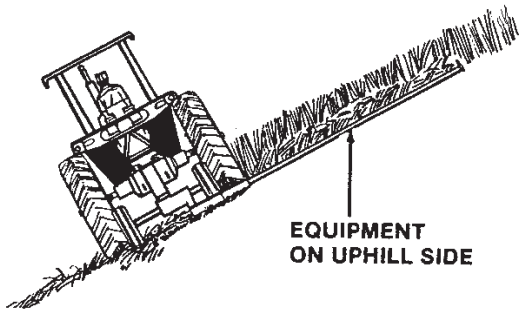


Centrifugal force tends to pivot the tractor on its outside wheels, causing a "side" overturn.

If a tractor begins to slide sideways to the direction of travel, you may turn over into a ditch or hit an obstacle and upset.

Reduce speed when turning with a loader. As you turn with a raised loader, you increase the possibility of a tractor overturn. Keep the loader as low as possible, and watch for ditches, holes and rocks that might cause an upset.

4. **Stay off slopes too steep for safe operation.** A tractor's stability is greatly reduced on steep slopes. To increase stability, set the wheels at the widest setting suitable for the job you are doing. Drive slowly and avoid quick uphill turns. Watch out for holes and depressions on the downhill side and for rocks, terraces and bumps on the uphill side. If you are using side-mounted equipment, keep it on the uphill side of the tractor.



5. **Keep tractor in gear when going downhill.** This allows the tractor engine to serve as a brake. If in doubt about which gear to use, select the lower-speed gear and make that shift before you start downhill.

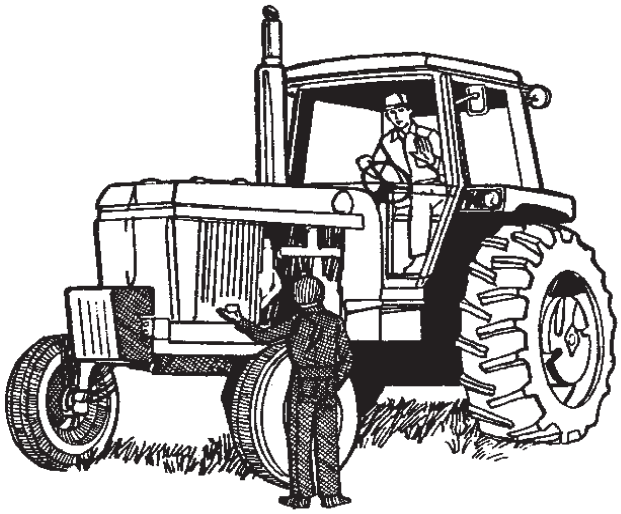
6. **Watch where you are going, especially at row ends, on roads and around trees.** When coming to the turnrow, slow the equipment speed. Be alert to roads, ditches, levees and fences. Make turns as wide as possible. Apply a single brake in the direction of the turn. *But only do this at an appropriately slow speed.* Quick, short, brake-assisted turns can cause upsets.

7. **When operating on public roads, tractor operators must follow all traffic rules.** Latch right and left brakes to provide fast, safe stops. Slow down before stopping or trying to make a turn. Fishtailing or severe braking at high speed can cause jackknifing and rollover. The safest procedure is to reduce engine speed and slow down before turning. Apply both brakes if braking action is required. Then turn as wide as you can with engine power pulling the load.

Fishtailing or severe braking at high speed can cause jackknifing and rollover.

Fasten a "Slow Moving Vehicle" emblem securely to the rear. Maintain a bright, reflective finish to warn oncoming motorists at least 500 feet behind you.

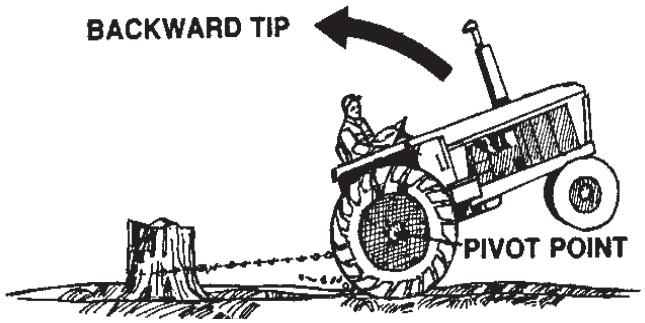
8. **Don't let others ride.** All except the newest tractors are designed for only one operator and no passengers. Children often plead for rides, but don't give in. If there is only one seat and one seat belt on a tractor, allowing a rider is too dangerous. Use cars or trucks for transportation.



Observe the "No Passengers" rule.

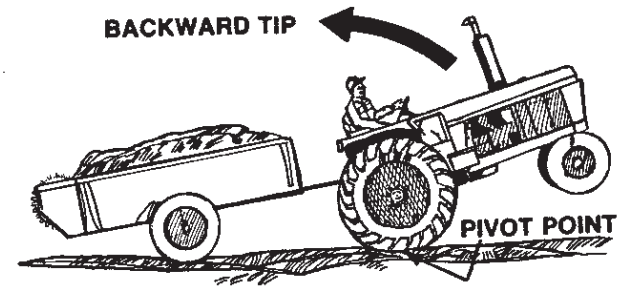
9. **Operate the tractor smoothly – no jerky turns, starts or stops.** Before moving equipment, make sure no person or obstruction is ahead or behind. Build experience operating at slow speeds so you can recover from a poor decision without an overturn. As you begin to move, engage the clutch slowly and evenly. Engaging the clutch suddenly or quickly shifting a hydraulic transmission to high speed could tip the tractor over backwards, especially when towing a load or starting up a slope.

10. **Hitch only to the drawbar or the 3-point hitch with appropriate implements.** Hitching above the normal drawbar height may cause a tractor to tip over backwards. Any time you are towing a load with a tractor, the powered rear wheels tend to rotate the front of the tractor upward. A restrained tractor pivots around the rear axle and overturns in less than three-fourths of a second.



Rear axle torque will upset the tractor if rear wheels can't spin or move forward.

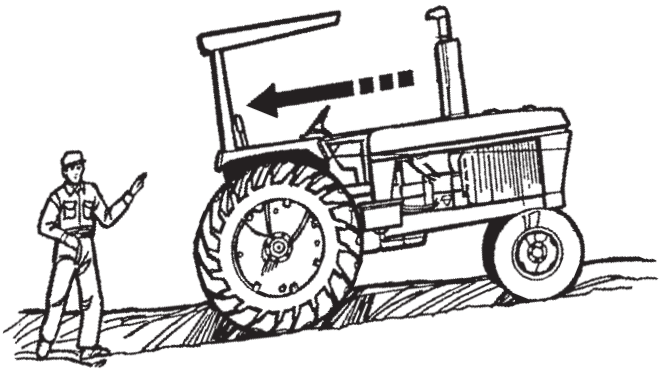
Tractor hitches are designed to pull heavy loads without risk of a backward upset. When the hitch point on a tractor is raised, the chance for a backward upset is greatly increased. Always hitch to the drawbar and keep it as low as possible. Add weights on the front weight rack to counter-balance heavy planters and implements to reduce the risk of a rear overturn.



Hitching above normal drawbar height may tip a tractor backward.

Always use a safety-hitch pin for fastening an implement to the drawbar of a tractor. A safety pin cannot bounce out, freeing the implement to careen out of control, possibly causing an accident.

11. **When stopping a tractor, set the brakes securely and use the park lock if available.** If your tractor has a parking brake, use it. Don't depend on leaving the transmission in one of the driving gears to keep your tractor from rolling.



To avoid this, set the parking brake or shift into park.

If your tractor doesn't have a parking brake, then shift the transmission lever to the park position. This locks the transmission, keeping the tractor stationary. If neither a transmission lock or brakes are reliable, warn all others of the defect and have it repaired as soon as possible. Always warn all others if you have to leave the transmission engaged. This will prevent an accident when it is restarted. Make this a habit every time you leave the tractor seat. *Shut off the tractor, set the parking brake or shift to park and remove the key.*

12. **Never try to start a tractor when you are not in the seat.** "Bypass-starting" or "jump-starting" cancels all the safety interlocks designed by the manufacturer to prevent tractor run overs. Many times starting problems dominate your thoughts and you may fail to check that the transmission is not in park or neutral. People working on the starter are frequently crushed by the front or rear tire because there isn't enough time to stop the tractor or jump beyond the path of the wheel.

Over the last ten years, more than 20 Arkansans have been killed when they were run over by a tractor. A portion of these deaths resulted from bypass-starting. Some were riding with the operator, and others lost control and fell under the tractor. Victims who bypass the interlocks intended to prevent starting a tractor in gear are typically crushed, but not killed, by the tractor wheels.

13. **Don't remove or change an approved Roll-Over Protective Structure.** If the structure is damaged in an overturn, replace it. Folding or "telescoping" models of ROPS are available that can readily be lowered if overhead clearance is inadequate. These new ROPS should be installed on all tractors operating in confinement, such as poultry houses, and raised when clearance is adequate. ROPS with seat belts can prevent most rollover injuries and deaths.

14. **Never leave the tractor seat with the power take-off shaft engaged.**

Get an operator's manual and follow the manufacturer's guidelines for operation, maintenance, lighting, adding weights and attaching implements. Change your driving practices to improve your safety. You'll be much safer if you come to work well rested. Fatigue, drugs, anger or absentmindedness can contribute to a fatal mistake. Your safety is in your hands when are you at the wheel.

These 14 recommendations address common oversights that cause tractor accidents. These ideas are important for your safety. However, they aren't all you need for your safety. Be constantly alert for hazards and danger while operating a tractor. Learn from experienced operators who work safely. Developing safe driving practices and evaluating your techniques regularly are important. This could save your life.

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