



SAFETY WITH AGRICULTURAL TRACTORS

Tractors have contributed immeasurably to farm productivity and helped make it possible for farmers to feed not only themselves but also hundreds of others.

Although today's tractors are the safest ever, they are still involved in many farm accidents. Over the years manufacturers have added many safety features such as roll over protection, seatbelts, power take-off (PTO) shields, traveling lights, heated cabs etc. All the safety features in the world do not replace a well-trained operator, aware of the potential hazards of operating a farm tractor.

Guidelines for Safe Tractor Operations

Before Using a Tractor:

- Know the tractor and how to use it safely. Review the safety precautions in the operator's manual regularly. Observe and follow the instructions contained on warning decals attached to your tractor.
- Be sure the tractor is properly serviced. Check lubrication, fuel and water. It is best to check the radiator level when the tractor is cold. If you must check it when hot, use extreme care.
- Set the wheel treads as wide as practical and properly inflate the tires. Make sure guarding is in place and working. Repair hydraulic leaks and tighten loose fittings. Equalize the brakes so that the tractor will not pull to one side. Make sure all drivers are competent and wear their seat belts if the tractors are equipped with ROPS (rollover protective structures). Make sure there is clear visibility from all sides and all lights are visible and working. Keep safety signs clean and free from obstructing material. Replace damaged or missing safety signs with new ones.

STARTING THE TRACTOR

- After having made a preliminary circle check of the tractor, fasten the seat belt and adjust the mirrors. You are ready to start the tractor. Make sure there are no obstructions in the tractor's intended path. You may start the tractor and begin work, monitoring performance, particularly when first starting.
- Correct any malfunction as soon as possible to avoid loss of time and unsafe operating conditions. If for some reason a tractor needs to have the battery boosted to start it, ensure that proper boosting techniques are used. Refer to the operator's manual if necessary. An operator should be properly located on the tractor when starting it. Never by-pass start a tractor.

REFUELING

- Use caution when refueling tractors. There is always a risk of fire and explosion. Never refuel the tractor while the engine is running or hot. Always refuel the tractor outside. Static electricity, a spark from the ignition system or a hot exhaust could cause the fuel to ignite. Grounding out the tractor with a ground wire or by dropping mounted equipment so it touches the ground can reduce static electricity.
- Store your fuel outside. It's best to have fuel storage at least 40 feet from any building. Keep the area free of weeds or any other combustible material. Carry a first aid kit and an approved dry chemical fire extinguisher. Tractors should have at least a five-pound extinguisher.
- Be sure of good ventilation before starting the tractor engine. Exhaust gases contain carbon monoxide, which is odorless, colorless and deadly.

NO RIDERS POLICY

- Keep small children away from tractors. Tractors are designed to carry only one person-the driver. Each year small children are killed as a result of falling from the tractor. The chances of children being killed are just as great when they are allowed to ride on trailing equipment.

OVERTURNS

- Tractors can overturn very easily. Fit all tractors with ROPS (rollover protective structures).
- Raised objects, operating with a front-end loader, and operating on a steep incline, are just a few of the possible causes for overturns. Avoid operating near ditches, embankments and holes. Stay off steep slopes and reduce speed when turning, crossing slopes, and on rough, slick or muddy surfaces.
- If you must turn on a slope, turn downhill. Drive straight down even on the gentlest slope, not diagonally across it. Never coast. Shift to the lowest gear to prevent freewheeling and excessive braking. Take extra care on slopes when carrying heavy, high, swaying or unstable loads.
- Keep wheels spread wide whenever possible. A tractor will overturn sideways much easier if the wheels are close together. When wheels must be moved in for narrow crop rows, use extra caution, especially when traveling at higher speeds on roads.
- Reduce speed before turning. Doubling the speed of a farm tractor quadruples the danger of upsetting sideways. If you try to turn at a high rate of speed, the tractor will attempt to go straight rather than turn.
- Reduce speed when using a loader. A loader in the raised position can increase the possibility of overturns. Keep the loader as close to the ground as possible. Be alert for ditches, rocks or holes that might cause the tractor to overturn. The center of gravity is affected if the load is kept too high in the air.

- Stop the engine before getting off the tractor. Operators can be killed by a tractor when the tractor has been left running with the operator not in the seat. Tractors have accidentally gone into gear while the operator was dismounting. Tractors left in neutral without the parking brake on have crushed some individuals.

HITCHES AND GENERAL PRECAUTIONS

- Never hitch to the axle or other high point. Hitch towed loads only to the drawbar and at the manufacturer's recommended height. When using the three-point hitch, add front weights, as necessary, to maintain stability and prevent steering problems.
- Use the proper safety clips and pins. Keep your hitches low and always keep the hitch on the draw bar. This can help prevent a tractor flipping over backwards. Slowly take up slack and never jerk on chains or cables; be sure no loose chains are dangling either from the drawbar or the implement. They can catch on a stump or rock and pull your tractor over backwards.
- Broken parts of a chain can act like shrapnel, and a snapped cable can cut the legs from under a person. Nylon ropes have killed tractor operators and bystanders when the rope broke away from an implement.
- Tractors also can upset backwards when pushing, using a front-end loader, or when hitched to the front end by chains or cables that pass under the back axle. Keep the hitch as low as possible, preferably 17 inches. Never get above 21 inches.
- Be extremely careful when driving up an incline. A tractor can upset if the center of gravity moves behind where the rear wheels are in contact with the ground. Try to back up if it's necessary to get up the incline. If you get caught on a steep incline, back down very slowly and apply the brakes lightly. Weight on the front of the tractor will help.
- Disengage the Power Take-Off (PTO) when it's not in use. Use the PTO shield whenever equipment is in use.
- Never jump from a moving tractor or turn your back on the tractor with its engine running. If the tractor starts to run over you, you may not be able to stop it.
- Do not wear loose clothing while operating a tractor. Loose clothing can catch on moving parts and cause an accident.
- Keep the tractor in gear when going down hill. This allows the tractor engine to serve as a brake. Some tractors may have "free wheeling" in their transmission drive. Make sure this type of transmission is put in direct drive before attempting to use the engine as a brake.
- Engage the clutch gently, especially when going uphill. 'Jackrabbit' starts are dangerous to both the operator and the tractor.
- Never attach a post or log to the rear wheels when the tractor is stuck in the mud. If the wheels are not free to turn, the tractor can pivot around the axle and upset. Try to back out. If

this does not work, get another tractor to pull you out. Make sure that the towing tractor has roll over protection and a seatbelt.

- The tractor operator must follow all traffic rules on open roads. This includes proper lighting, hand signals, right-of-way, etc.
- Do not use a tractor for a job it wasn't designed to do. The tractor was designed as a source of power to do field work. It was not designed for chasing cattle, drag racing, or transportation to and from town.

SAFETY RULES WHEN USING TRACTOR ATTACHMENTS

- Keep all shields and guards in place. Do not operate equipment with missing shields or guards.
- Shut off engine and be sure implement motion has stopped before performing adjustments or maintenance.
- For some attachments, use counterweight for stability. Lift rear-mounted attachments and drive slowly when making sharp turns. Raise and lower attachments slowly and smoothly.

TRAINING NEW OPERATORS

- Train new and inexperienced operators. Have them review the operator's manual before operating the tractor. Teach the new operator to recognize hazards and know how to avoid them. Point out special hazards on the farm. Do not let them drive on public roads under the age of 16. It is suggested that an operator should have a driver's license to take equipment on the roadway.
- Have the new tractor operator practice, without equipment attached, in a level field or a large, level yard. The trainer should start the tractor, demonstrating the procedure for the new operator. The trainer should drive the tractor around the yard, showing the student how each of the controls operates. The trainer may need to be on the tractor as the student drives it. In such a case, extreme caution must be exercised. The trainer can give instructions as the student drives.
- After the new operator has learned to operate the tractor alone in a level area, the next step is to attach and operate the equipment. The new operator should gradually work into the more complex jobs of tractor operation.

KEEPING THE TRACTOR CHEMICAL-FREE

- Before entering the cab, remove personal protection equipment (PPE) worn while handling and mixing chemicals.
- If the cab is a type that will not protect a person during product application, it may be best to continue wearing PPE.

These are other suggestions to keep the tractor cab chemical free:

- Remove contaminated soil and debris from shoes or boots before entering the cab.
- Keep the floor clean by sweeping or vacuuming. Wipe down the cab headliner or inside cowling.
- Clean the tractor exterior to reduce the exposure to chemicals.
- Never grasp the steering wheel while wearing gloves that were worn during handling or mixing chemicals.
- Clean the control knobs and steering wheel regularly with grease cutting agent or solution.

INAPPROPRIATE USES

- Never use a tractor for a task it is not designed for. Tractors are implement carriers, transport units and remote power sources.
- Tractors are not recreation vehicles, tow trucks or vehicles to run errands.
- Never use a tractor for joy riding or herding cattle.

FINISHING

- When done working for the day, park farm machinery in a safe place.
- Disengage the PTO, lower equipment to the ground, turn off the engine, put the transmission into neutral or park, set the brakes and remove the key. Never leave the vehicle in gear.

SHUTTING OFF DIESEL TRACTORS

Shutting off diesel tractors requires more than turning the key. Follow the instructions in your operator's manual or as recommended by the manufacturer.

OPERATING LARGE TRACTORS SAFETY

Giant four-wheel-drive tractors are now used on many farms.

Though most safety recommendations apply to both large and small tractors, there are special safety concerns when operating super-sized tractors. The tractor's dimensions may cause difficulties in tight places, at corners and gates, and on narrow roadways. Overhead clearances, especially around power lines, may cause a problem.

The unique steering systems of large 4-wheel-drive tractors present new handling problems, especially for beginning drivers. All-wheel steering can shift a towed device into an unexpected path. Articulated steering changes the rig's center of gravity so that an overturn can occur under unexpected conditions. With articulated steering, high-speed road travel requires more operating skill than conventional tractor steering does.

If an operator steers a unit with articulated steering while it is standing still, a bystander can be trapped in the hinge region.

- All new tractors carry warnings, but it is the operator's responsibility to be sure everyone is clear before starting or maneuvering the machine.

SAFETY REMINDERS

- Watch your step. Use the handholds when climbing up and down the cab access steps or ladder.
- Clear them of mud and ice. Clean your shoes or boots before mounting the tractor.
- Refuel with care. It takes longer to fill the big tanks. You may have to climb up and find a secure position from which to refuel.
- Do not smoke while refueling.
- Be sure everyone is out of the way before moving. A child, worker or animal next to or under a big rig may be hidden from view.

- Drive slowly when approaching tight turns, narrow gates, buildings and overhead obstructions that are not problems for smaller tractors. Remember heavily ballasted, big tractors cannot stop quickly.

- When the tractor tows a heavy wagon without brakes, the added load might increase the stopping distance to an unsafe degree, especially on downgrades. Slow down early. Equip large wagons with brakes. Keep tractor brakes properly adjusted and equalized.

- Steer articulated four-wheel drive tractors with care at transport speed to assure straight-line tracking. Slow down if the tractor's rear section begins to fish tail. Avoid steep side slopes. Do not pull so far to the right on roads that right-side wheels are in the ditch. The rear section of the tractor could then slide into a jack-knife position, resulting in loss of control or an overturn.

- Be sure that small bridges, floors and flatbeds will support the big tractor's weight and width before driving onto these surfaces.

The information and recommendations contained in this publication are believed to be reliable and representative of contemporary expert opinion on the subject material. The Farm Safety Association Inc. does not guarantee absolute accuracy or sufficiency of subject material, nor can it accept responsibility for health and safety recommendations that may have been omitted due to particular and exceptional conditions and circumstances.

Copyright © Farm Safety Association Inc.
101-75 Farquhar Street, Guelph, Ontario N1H 3N4
(519) 283-5600.