



FACT SHEET

Farm Safety Association

Agriculture • Agribusiness • Horticulture • Landscaping

HARVESTING SAFETY

Exposure to powerful agricultural machinery occurs most often during the harvest season. Operators may be less familiar with seasonal equipment used only a few days each year and may not be accustomed to situations that pose possible dangers or risk. For these reasons, it is important to be familiar with harvest equipment and be able to anticipate and avoid potentially hazardous situations.

CAUSES OF ACCIDENTS WHILE HARVESTING

Tractors are most commonly used to haul various pieces of equipment needed during harvest. Various field conditions such as ruts, hills, mud, or the addition of front end loaders can affect the stability of a tractor. The operator must be constantly aware of changing conditions and make adjustments as necessary.



Driving on the shoulder-half on the road and half off-is dangerous since it encourages people to pass in possibly unsafe or dangerous situations.

LIFTING BALES ONTO A TRUCK OR WAGON

Sudden movements by the truck or tractor can throw workers off balance. Workers can fall off the platform and be run over by the

machine, or they can lose control of the hay bale causing it to fall off the platform and strike a worker.

IMPROPER USE, HITCHING, OR MAINTENANCE OF IMPLEMENTS

Harvesting forage crops may involve mowers, rakes, balers, stackers, loaders, and other machines. All have moving parts that can easily entangle a person who comes in contact with them.

Improper hitching of the implements could cause the tractor to overturn. Improper maintenance may result in loose parts flying off and striking bystanders or workers. Trying to unclog a machine when it is still running is a major reason for serious accidents.

WORKING IN UNFAMILIAR FIELDS

Hitting a hole, rut, or stump may cause an overturn, or throw the operator from the platform of the tractor and cause an accident.

UNSAFE TRANSPORT OF EQUIPMENT

Going too fast, not having clear sight when turning onto the road, failure to have the proper signs and lights, and not driving defensively all contribute to accidents.

BEFORE HARVESTING

- Equipment should be made harvest-ready in the off-season, or at least several weeks before use.
- Review operation manuals and follow maintenance guidelines. Cleaning, proper lubrication, replacement of worn parts (belts, chains, springs, hydraulic hoses, etc.), and replacing shields may save valuable time during the short harvest period.
- Secure all guards and shields before starting equipment. These protective devices reduce the chance that people will get caught in moving parts.
- Examine fields for changes since last fall: debris, limbs or foreign objects, and driving hazards, such as holes and ditch formation or undercutting.
- Remove stumps, stones, or other debris from the field, or clearly mark them to prevent upsets, turnovers, and damage to equipment. Also mark ditches and banks.
- Some banks are undercut. You need to be aware that what appears to be the edge may not be solid, but that there may be an open space below it.

- Plan harvesting so equipment travels downhill on steep slopes to avoid overturns. Space tractor wheels as far apart as possible when operating on slopes.
- Make sure the hydraulic hoses are clean and in good repair and hooked up correctly. Check the twine feeding and cutting mechanisms to see that they are working properly and that your twine is in good condition.
- Keep fluids clean and check often for damage to the system. Use a piece of cardboard to check for hydraulic leaks, as the high pressure can penetrate the skin.
- Also check the slip clutch, roll scraper and rear gate latch to make sure they are adjusted and functioning according to the manufacturer's recommendations.
- Many machines also have belts and chains. Keep these in good repair and have the right tension on them at all times.
- Be sure the tractor has front-end ballast. This will prevent the tractor from tipping backwards
- Make sure all machines are hooked up correctly—do not hook up a 540-rpm mower to a 1,000-rpm PTO. Operating a mower or forage harvester at excessive speed can cause machine failure and possible injuries from flying debris if parts fail.
- When loading bales manually, be sure that the driver does not start and stop suddenly. This can throw workers off the wagon or truck. Make sure workers do not ride on top of the stack. They could fall off and be run over.
- Instruct workers to be aware of the stack condition and where fellow workers are throwing the bales. Bales falling off the stack can strike a worker and result in a serious injury. Lock or secure machines such as headers, bars, stackers, when working on them.
- Block the wheels too. This will keep the machine from falling or rolling on workers as it is being repaired.
- Finally, check all lights and warning reflectors, and clean your slow-moving vehicle emblem. Check your fire extinguisher to see that it is in proper operating condition

CONVENTIONAL BALERS

- The flywheel maintains the uniform momentum of a baler's working parts. It also keeps the machine operating for a considerable time after power is disengaged. Never attempt to work on a baler until the flywheel has completely stopped.
- The flywheel can be turned manually to permit slow motion observation of the knotter function.
- However, it should never be turned while someone else is working on the knives, knotter or other moving parts.

ROUND BALE HAZARDS

- There are some key points to consider when harvesting and handling large round bales.
- Equipment used to handle the big bales should be



fitted with rollover protective structures. Never attempt to carry a round bale in a loader bucket. All loaders should be equipped with a spear or grapple that is specifically designed for the size of the round bales being handled.

- Loaders should be equipped with a restraining device that will prevent a loose bale from sliding backwards.
- Loaders must be large enough and equipped with sufficient counterweight to handle bales safely. Set wheels at maximum width to increase stability.
- Avoid steep slopes and rough terrain when moving bales with a loader. If it is impossible to avoid sloping land, approach bales from the downhill side.
- Avoid sudden stops, starts or changes of direction. Be very cautious and travel at low speed when carrying a bale. Always keep bales as low as possible for maximum stability. The risk of a bale breaking free is greater when loader arms are raised because the load is less stable.
- Wagons used to haul bales should be of sufficient width and have end racks to prevent bales from moving off the ends and sides during transport.
- Use good judgment when stacking bales in storage. High stacks make efficient use of available space, but removal could be hazardous.
- Carefully transport round bales from the field to storage. Keep the load as low as possible. Use the controls smoothly, avoiding jerky movements.
- Do not travel too fast and make sure that there is adequate ballast on the front and rear to counter balance the load.

FORAGE HARVESTERS

- Always disengage the PTO and shut off the tractor/harvester before working on equipment. Allow the machine to stop before hooking up wagons.
- Doors and shields should be tightly latched to deflect objects thrown by the cutter.
- Stay well clear of the discharge spout while the harvester is operating. To avoid being hit by objects from the spout, completely stop the machine before hooking up wagons.
- Components may continue to rotate for several minutes after the power is shut off. Do not open doors until all parts have stopped moving.

- Knives must be kept sharp and properly balanced for safe, effective operation. Follow maintenance procedures specified in the owner's manual.

THE HUMAN FACTOR

- Safe completion of any task depends on knowledge, alertness and hazard awareness.
- Fatigue, drowsiness and illness can lead to mishaps in the field. Recognize when you have had enough, and turn the operation over to someone else.
- Adverse weather adds to harvesting pressure. Do not rely on stimulants to keep you going or depressants to calm your nerves.
- Equipment operators should be dressed for comfort and safety. Protective footwear and close-fitting clothes are essentials when working in and around machinery. Wear appropriate safety gear if noise, dust or toxic materials pose hazards.
- Do not allow children around machinery. Far too many tragedies occur when youngsters end up in the path of equipment and operators have a restricted view.

ENTANGLEMENT HAZARD

- To avoid entanglements, always disengage power and turn off the engine before trying to manually clear a plugged machine.
- Never try to pull or remove twine or wire from a bale case or knotter when the baler is in operation.
- Likewise, never try to feed twine by hand. Even if the engine is on idle, twine moves through a baler faster than the operator can react.
- Always keep protective shields in place. Beware of slips or falls that could place anyone near the machine intake area.

HAZARDS OF FALLING

To reduce fall hazards, remember to:

- Always keep all platforms free of tools or other objects. Frequently clean the steps and other areas where workers stand to service, mount and dismount, or operate the machine.
- Wear well-fitting, comfortable shoes with non-slip soles. Use grab bars when mounting or dismounting machinery.
- Be sure your position is stable before you perform maintenance.
- Recognize that fatigue, stress, drugs or alcohol, and age may affect stability. Harvest season comes with many stresses.
- Exposure to dangerous situations can increase the mental pressure, and your risk of injury. Follow safe practices around harvest equipment to make the most of your work time during this important season.

TRANSPORTATION,

- It is recommended that the extremities—the widest part of balers, mowers and forage choppers—have reflectors or reflective tape on them. This will assist the driving public in recognizing the width of the towed equipment.

- Always return the equipment to the roadway position before traveling on public roads. This position makes the equipment as narrow as possible, an advantage when pulling to the side to allow traffic to pass. Make sure a slow moving vehicle emblem is on the last piece of equipment being towed.

MOWING/CONDITIONING

Heavy crops, rough terrain, and too high a speed can cause clogging or plugging. The more this occurs, the more the operator is tempted to leave the machine and tractor running.

- Always disengage the PTO and shut off the tractor. Keep sickle bars and rotary knives sharp.

SQUARE BALERS

- Always disengage the PTO and shut off the tractor before working on equipment.

The flywheel supplies a uniform momentum for operating parts and will continue to turn even after the PTO is disengaged.

- Always allow time for it to stop turning before working on the baler.
- Knotter operation can usually be viewed by a hand turning the flywheel. Be watchful for co-workers when two or more are working on/adjusting equipment.
- Extra caution is needed when bale throwers are used because of potential energy in the unit.
- The newer large square baler's pose an even greater risk because of the larger tractors needed for operation and the weight of the bales produced.
- As always, caution is needed when loading bales by hand onto wagons. The experience of the stacker and the person driving the tractor or truck pulling the wagon are important elements for safely loading and hauling wagons from the field.

CORN PICKERS

- The picker's snapping rolls are the most common culprits for farmer injury because they frequently plug if ground speed is too fast or slow. When plugged, the rollers still travel freely, but stalks bunched around the rolls prevent stalks from entering.
- In hopes of clearing the plug quickly, farmers may be tempted to unplug the rollers without stopping the picker and shutting off the tractor. As the farmer frees the stalk that caused the plug, it rapidly moves into the roller, sometimes taking the farmer's hand and arm with it.
- Always stop the machine and shut off the tractor before attempting to unplug the picker.

COMBINES

- Like corn pickers, combines have numerous areas where individuals can be injured if they fail to follow safe operating practices. These areas, which must remain open for the crop to enter the machine, must be avoided while the machine is operating.
- Never attempt to dislodge stalks or grain sheaves with your feet or hands while the combine is running.

- Always shut down the combine and turn off the ignition before removing plugged or lodged material.
- Most combine adjustments should be made with the machine shut off to avoid injury to the operator.

While there are certain adjustments that must be made while the machine is running, such as adjusting the variable speed cylinder or fan, these procedures are outlined in the owner's manual and shielding usually provides protection so adjustments can be made without risk to the operator.

- Don't rely on hydraulic cylinders to hold the header up. Use locks or solid blocks to stabilize the header while working beneath it.
- Properly preparing the combine for transport can reduce the risk of a combine/vehicle accident. This is done by:
 - Emptying the grain tank to reduce weight and lower the center of gravity. Move the unloading auger to the transport position.
 - When practical, remove the header to reduce width and transport it on a truck or other implement carrier.
 - Make sure a slow-moving vehicle (SMV) sign, lights and reflectors are in good condition.
 - Check that the combine is not wider than any bridges or culverts that must be crossed to reach the field.



GRAIN WAGONS

- Riding on grain wagons or any other tractor-pulled equipment places the rider at risk for an injury. Children are especially at risk for falling off a wagon as the wheel hits a bump or drops into a rut in the farm lane. Grain, as it is being unloaded from a gravity wagon, can quickly trap and suffocate a child or worker.

As the grain flows out the chute it creates a funnel that can drag a person down toward the opening.

The walls of the funnel may collapse and bury the person, resulting in suffocation if assistance is not immediately available.

AUGERS

- Augers can present several safety risks for farmers and workers, including entanglement in the auger shaft, electrocution from touching overhead power lines, and being crushed by the auger if it unexpectedly collapses.

Collapse of the auger undercarriage during transport and while in use is another common cause of injuries.

- Workers should secure the auger to a vehicle rather than move it by hand to avoid an up end accident where the end of the auger becomes top heavy. Get out of the way if the end of the auger begins to upend and lift the base out of the worker's hands.
- There is little that can be done to stop the auger from upending once the base is lifted above the auger center of gravity. Moving the auger with a tractor will prevent upending accidents and leveling the soil in the bin area will reduce side to side rocking.
- Once in position, both ends of the auger should be supported before operation. Crank the auger down far enough so the top of the auger rests on the grain bin and block the wheels in place.

Cable or winch failures are another hazard with augers.

- Never attempt to stop a freewheeling crank handle with your hand or foot. Some augers are equipped with a clutch to prevent freewheeling and others can be raised and lowered with the tractor's hydraulic system. Proper maintenance and storage increases an auger's life span and reduces accident risks.

- Frequently inspect and replace any cables or support legs that are worn or damaged.

An auger can quickly tangle an operator's hand or foot unless precautions are taken to prevent entanglement.

Keep all shields in place and warn workers about the dangers of entanglement. Never use your hand or foot to dislodge grain that is plugging an auger. Use a stick or rod to loosen a plug. Tools and other objects should be picked up and put away to prevent someone from tripping and falling into an auger.

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.

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