



Fatal Facts



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Farm Tractor Hazards



Tractors may be one of the most deadly pieces of equipment on Washington State farms – if operated or maintained improperly. Between 1998 and 2006, 19 farmers and farm workers lost their lives in tractor-related incidents. “Accidents” don’t just happen. Most of these deaths could have been prevented. Knowing the capabilities of a tractor, how to safely operate it and maintaining it in good working order will go a long ways towards ensuring the safety of the operator. Assuring that Rollover Protective Structures (ROPS) and seatbelts are installed on every tractor possible would greatly reduce the risk of tractor-related fatalities.

Rollover Protective Structures (ROPS) Used with Seatbelts Save Lives!

These are brief case descriptions of selected fatalities that happened while operating or working near agricultural tractors in Washington State during the years 1998-2006:

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| Case 1 | On May 25, 2005, a farm manager was operating a low profile agricultural tractor pulling a three-point hitch mounted harrow in a newly planted orchard. He reached the end of a row and was turning the tractor around when it rolled over pinning him underneath, killing him. |
| Case 2 | On October 7, 2004, an orchard owner was having trouble getting a tractor started, so he bypassed a mechanism that prevented the tractor from being started in gear. He started the tractor and was run over by it. |
| Case 3 | On May 25, 2003, a farmer was operating a tractor in a field when he fell off and was run over by the tractor and wheeled trailer that was being pulled behind. |
| Case 4 | On August 23, 1999, a farmworker was driving a tractor towing a hay baler on a public road when the wheels of both the tractor and baler went onto the road’s gravel shoulder, causing the tractor to roll over into the steeply banked shoulder. The victim attempted to jump free, but was crushed and killed by the tractor. |

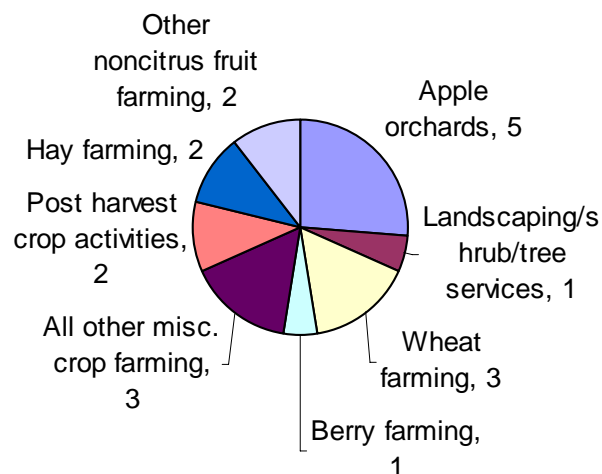
Washington State Workers and Farm Tractor Fatalities

- 19 farmers and farm workers died in tractor-related incidents between 1998 and 2006.
- 10 of the 19 incidents involved the rollover or overturn of a tractor.
- 8 of the 10 tractors that rolled over had no ROPS. It is not known whether the other 2 tractors had ROPS installed due to lack of available investigation information.
- 7 of the 10 rollovers or overturns happened in an orchard.

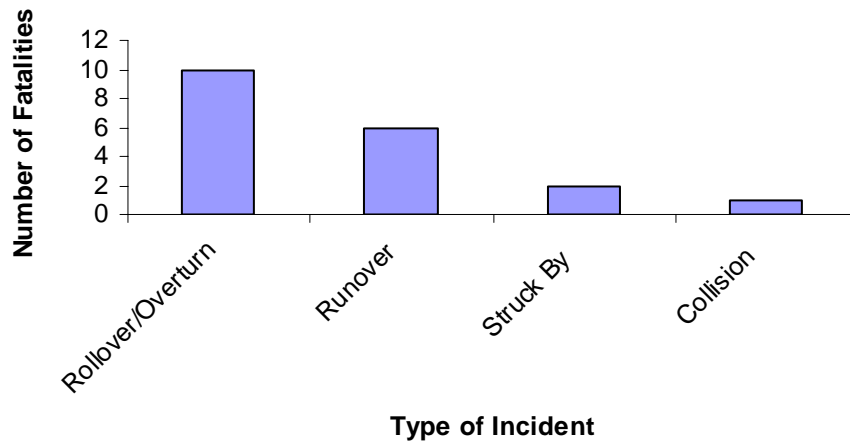


Tractor-related fatalities occur in most sectors of farming in Washington. Apple orchards had the highest number (5) of fatal incidents between 1998-2006. Wheat and hay farming, together, also had 5 fatalities during this period.

Fatalities by Industry Sector in Washington State from 1998-2006



Fatalities by Incident Type in Washington State from 1998-2006



Preventing Tractor Rollovers

Rollover/overturns have been the number one type of fatal tractor incident. These outcomes can be devastating to farms and families. They are largely preventable by following some key guidelines. All tractors should be fitted with a rollover-protective structure (ROPS) and seatbelts to protect the operator in the event of an overturn. Newer types of ROPS exist that may work with tractors that must frequently operate under overhead obstacles.

- 1) Use caution when operating tractors on or near sloped terrain, embankments, or ditches.
- 2) Reduce speed when crossing slopes, turning at the end of a row or towing equipment and implements.
- 3) Do not operate on slopes that are too steep or slippery.
- 4) Back up steeper slopes, if they cannot be avoided.
- 5) Keep front-end loaders low, and hitches low and on the drawbar. Only tow loads from the rear hitch.
- 6) Match the tractor to the size of the load. Add front weights, in necessary to balance the implement load.
- 7) Train operators how to safely operate a tractor.



Surviving a Tractor Rollover

- 1) Install a rollover protective structure (ROPS).
- 2) Wear a seatbelt.

There are some cases where fixed ROPS may interfere with the work, such as when there are overhead obstacles. If this happens on occasion, folding ROPS exist which can be moved out of the way if necessary for clearance. The National Institute for Occupational Safety and Health (NIOSH) has also been developing an automatically-deploying ROPS (AutoROPS) that does not interfere with operation and only moves into place when a rollover is imminent.



Figure: Two examples of folding ROPS systems installed on tractors.

Preventing Tractor Runovers

Runovers are the second-leading cause of fatal tractor-related incidents in Washington State. A review of cases showed that several simple actions can help prevent these from occurring.

- 1) Start the tractor's engine from the operator's seat. Do not start the engine while standing beside the tractor. Avoid bypass starting.
- 2) When starting a tractor, be sure it is not in gear.
- 3) Operate the tractor from the operator's seat. Do not stand or sit on any other part of the tractor while it is in motion.
- 4) Wear a seatbelt, and assure that ROPS is installed.
- 5) Do not get on or off a tractor in motion. Do not walk or run beside a tractor in motion.
- 6) Turn off ignition before doing maintenance.
- 7) Consider installing a safe tractor access platform, if the tractor is not already equipped with one.
- 8) Consider installing a "dead man" seat brake that operates when seat is vacated, similar to that which is used in forklifts and other industrial equipment.

What is a Safe Tractor Access Platform?

Being runover by a tractor is the second highest cause of fatalities involving farm tractors. One way to lessen such a possibility is to retrofit older tractors to provide the operator with a safe means of mounting and dismounting. This can be achieved by attaching a running board, steps, or platform known as a safe tractor platform. The safe tractor platform allows the operator to mount and dismount from the outer edge of the rear wheel instead of in the front. The platform should provide hand-holds, be slip resistant, and help prevent the operator from starting the tractor while standing on the ground. The safe access platform addresses several of the causes of runovers by keeping possible injury victims from falling or standing in the area between the tractor's front and rear wheels. Tractor owners should check with the manufacturer before installing or modifying the structure of equipment. Any hardware should be properly designed and engineered to assure the integrity and safety of the system, and not compromise the operating capabilities of the tractor.



Figure: An example of a retro-fitted tractor access platform to prevent runover incidents.

Preventing Entanglements in the Power Take-Off (PTO) or Being Struck-by Equipment

Fatal incidents of tractor operators being struck by loaders have occurred in Washington State. Fatalities involving power take-off (PTO) drivelines are not common, however many serious non-fatal incidents occur from hazardous piece of the equipment.

- 1) Keep all parts of the PTO system shielded and guarded.
- 2) Always disengage the PTO and turn off tractor ignition before approaching the driveline.
- 3) Wait until the driveline and all machinery have stopped moving before performing maintenance or adjustments.
- 4) Never walk or work under a raised loader unless it is securely blocked..
- 5) Do not exceed a loader's weight limitations.

Preventing Collisions with Motor Vehicles on Public Roadways

Tractors are not designed to operate as over-the-road vehicles. The danger of driving tractors on roadways should be recognized by operators and several recommendations should be followed to help reduce the chances of a collision or other roadway incident.

- 1) Use trailers to haul tractors to other locations instead of driving the tractor on the road.
- 2) Keep travel on public roadways to a minimum.
- 3) Travel when visibility is good. Avoid travel during darkness.
- 4) Provide front and rear lighting if travel during darkness is necessary.
- 5) Display slow moving vehicle emblems and have reflectors.

Youth Operating Tractors

Farm equipment presents a constant danger to children on farms and teen workers. Operation of equipment by teen workers should be avoided if possible.



- 1) Teen-age workers must be 16 years old before they can operate tractors of greater than 20 PTO horsepower or other farm equipment.
- 2) Additional training and supervision should be provided if teen workers are to operate any farm equipment.

Getting Help

WISHA Consultation Program

Washington State Department of Labor and Industries

<http://www.LNI.wa.gov/Safety/KeepSafe/Assistance/Consultation>

Everett (Region 1, Northwest Washington): 425-290-1300

Seattle (Region 2, King County): 206-515-2800

Tacoma (Region 3, Pierce, Kitsap, Clallam, and Jefferson Counties): 253-596-3800

Olympia (Region 4, Southwest Washington): 360-902-5799

East Wenatchee (Region 5, Central and Southeastern Washington): 509-886-6500

Spokane (Region 6, Eastern Washington): 509-324-2600

WISHA Policy & Technical Services

Tumwater Central Office – Safety: 360-902-5460

Other Resources

- A Guide to Agricultural Tractor Rollover Protective Structures. A publication of the National Farm Medicine Center, Marshfield, WI.
<http://research.marshfieldclinic.org/nfmc/resources/rops/default.asp>
- National Agricultural Safety Database (NASD). <http://www.cdc.gov/nasd/>
- The National Institute for Occupational Safety and Health (NIOSH) maintains an agricultural safety and health topic page.
<http://www.cdc.gov/niosh/topics/agriculture/>
- A Guide to Safe Farm Tractor Operation. A publication of the Farm Safety Assoc. and available online through the National Agricultural Safety Database.
<http://www.cdc.gov/NASD/docs/d001501-d001600/d001534/d001534.html>
- Teen farmworker rules, resources and training material are available from the Washington Labor & Industries and the Childhood Agricultural Safety Network.
<http://www.lni.wa.gov/WorkplaceRights/TeenWorkers/Agri/default.asp>
<http://www.childagsafety.org/>

FACE Fatal Facts

Produced by the **Washington State Fatality Assessment & Control Evaluation (FACE) Program**, which is managed by the Safety and Health Assessment and Research for Prevention (SHARP) Program.



SHARP Program

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